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AN OVERVIEW OF LAND USE IN CENTRAL CANADA





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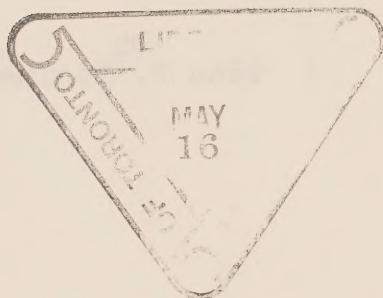
AN OVERVIEW OF LAND USE
IN CENTRAL CANADA

by
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August 1979

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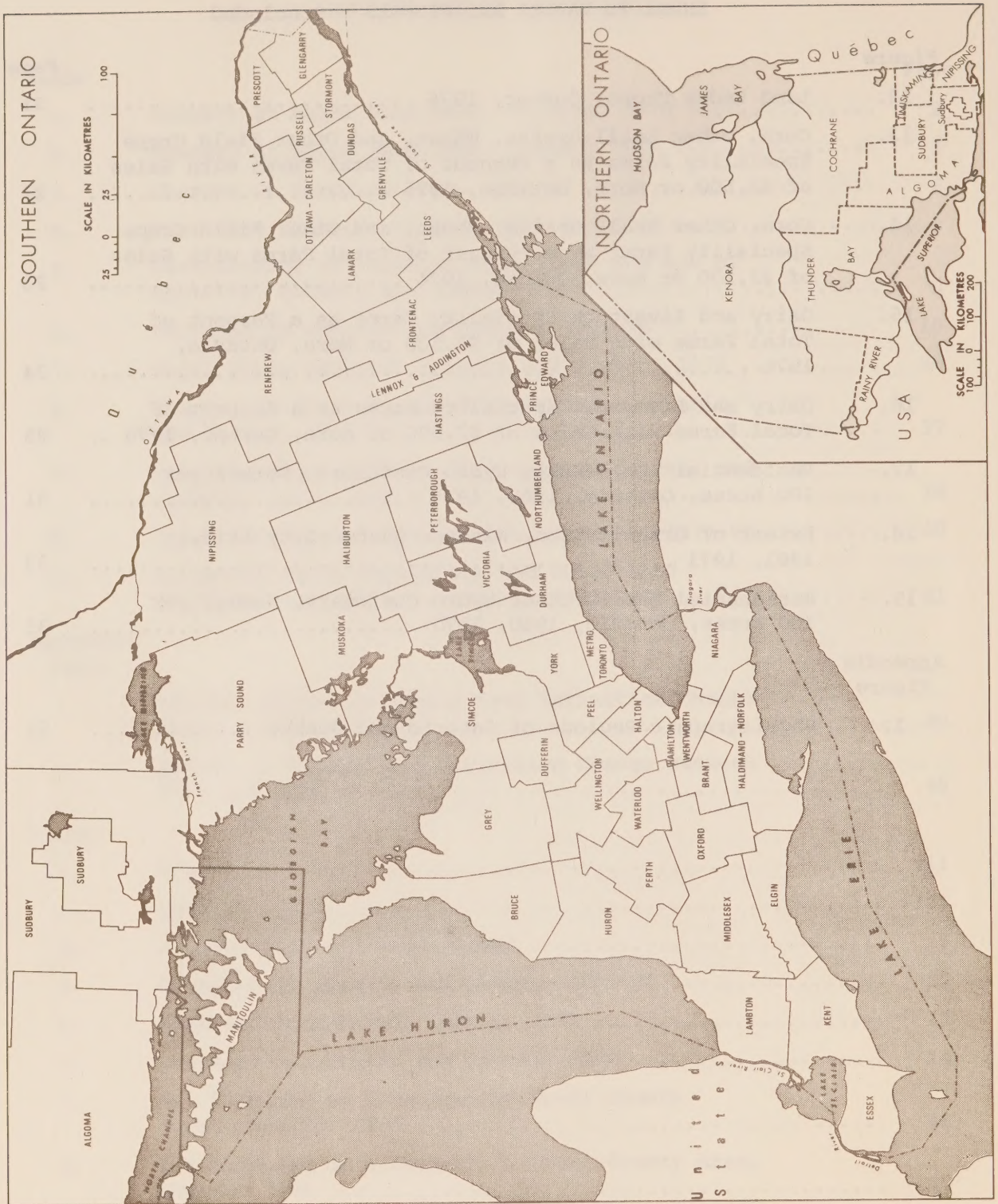


Figure 1.—Ontario

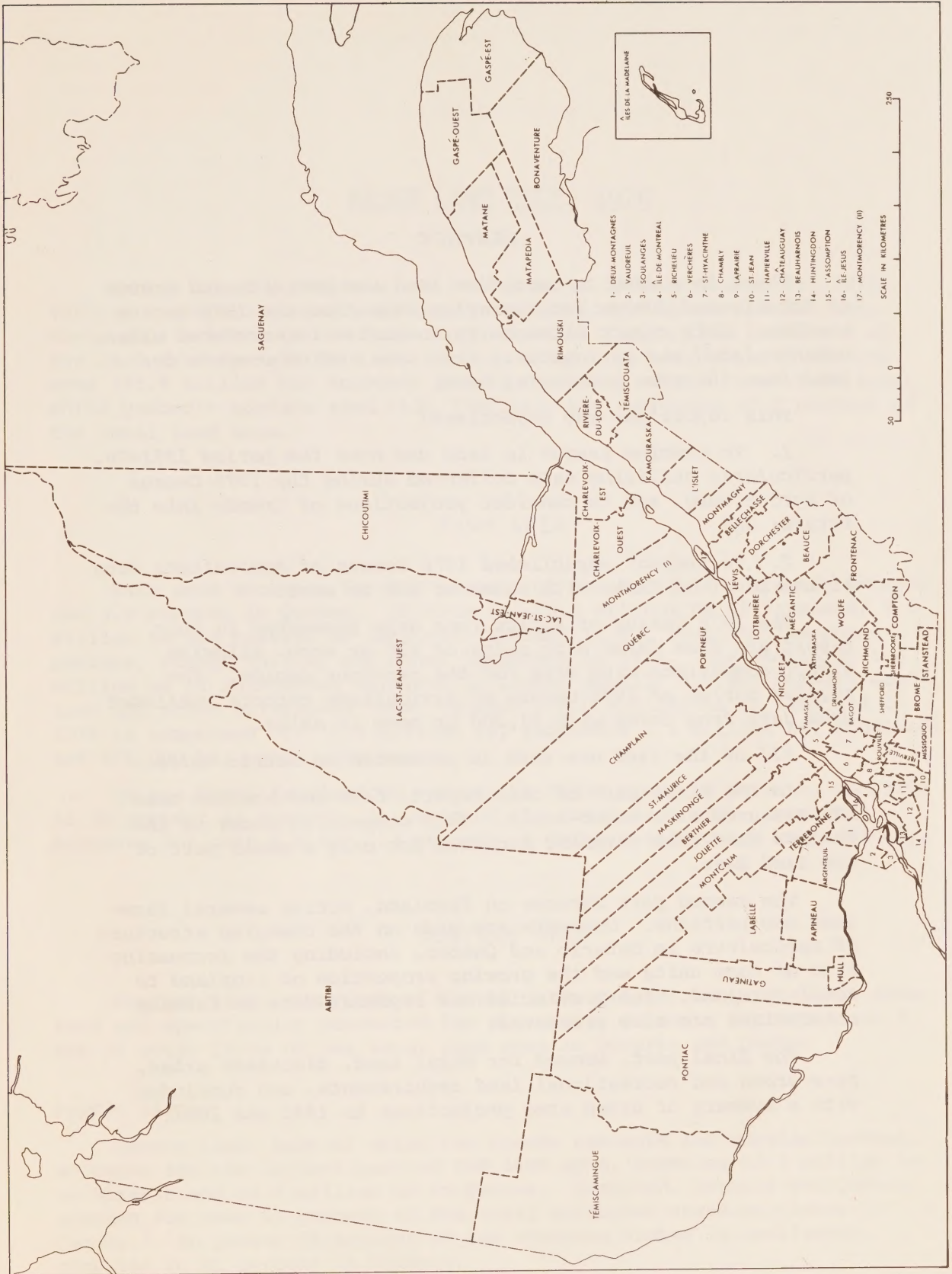


Figure 2.—Quebec

PREFACE

There is a need to capsulize land use patterns and trends in Ontario and Quebec incorporating data from the 1976 census results. This report attempts to summarize interrelated urban, urban-related and agricultural land uses, which compete for land from the same provincial base.

This report has two objectives:

1. To examine trends in land use over the period 1951-76, particularly utilizing data collected during the 1976 Census of Agriculture, and to consider projections of trends into the future; and

2. To present unpublished 1976 Census of Agriculture data at the level of farms with sales of \$50 or more.

The 1976 Census of Agriculture data presented in this report are from farms with sales of \$50 or more, allowing direct comparison with data for the previous decade. The regular series of 1976 Census of Agriculture reports published uses data from farms with \$1,200 or more in sales.

All of the land use data is presented in metric units.

In the first part of this report, farm and nonfarm uses are measured at a macro-scale. This comparison shows up the obvious fact that farmland accounts for only a small part of the land base.

The second part focuses on farmland, noting several farmland use patterns. Comments are made on the changing structure of agriculture in Ontario and Quebec, including the increasing size of farm units and the growing proportion of cropland to total farmland. Sub-provincial and regional data on farming enterprises are also presented.

The final part, Demand for Rural Land, discusses urban, para-urban and recreational land requirements, and concludes with a summary of urban area projections to 1991 and 2001.

MAJOR LAND USES, 1976

Tables 1 and 2 estimate the land area in different uses for 1976. Various assumptions were made in the derivation of estimates for uses where gaps existed in the data (Appendix A). The initial breakdown of the land area is into farm and nonfarm areas. Ontario's total nonfarm area (85.5 million ha) accounts for 93.2 percent of the total land area; while Quebec's nonfarm area (131.7 million ha) comprises 97.0 percent of the total land area.

FARM AREA

Farm area accounts for 6.8 percent of the total land area in Ontario and 3.0 percent in Quebec. Of Ontario's 6.3 million ha of farmland, 4.5 million ha are classed as improved farmland (i.e., cropland, improved pasture, summer fallow, and other improved) in 1976. The remaining 1.8 million ha of unimproved farmland is almost equally divided between woodland and other unimproved land. Quebec's 4.0 million ha of farmland in 1976 is comprised of: 2.4 million ha, improved; 1.2 million ha, woodland; and 452,000 ha, other unimproved.

Of the total farmland 56 percent is under crops in Ontario, compared to 46 percent in Quebec. In terms of the total land area, cropland accounts for only 3.8 and 1.4 percent in Ontario and Quebec respectively.

NONFARM AREA

Nonfarm land, comprised of forest land, special use areas, and other land not specifically accounted for elsewhere, accounts for more than 9 out of every 10 ha of the total land area in Ontario and Quebec.

FOREST LAND

Forest land, most of which has stands suitable for regular harvest, accounts for the largest part of the land area, covering 43.0 million ha in Ontario and 69.5 million ha in Quebec. Combined, Ontario and Quebec account for over 41 percent of the total estimated standing timber in Canada.¹ In Quebec 75 percent of the standing timber is coniferous, compared to 61 percent in Ontario.

¹Canada Year Book 1975 (Ottawa: Statistics Canada, 1975), p. 426.

Table 1.—Summary of Major Land Uses, Ontario, 1976

Major land use	Hectares, '000	% of total land area
FARM AREA^a		
Improved farmland:		
Cropland	3,507	3.8
Improved pasture	743	.8
Other	230	.3
Total	4,480	4.9
Unimproved farmland:		
Woodland	833	.9
Other	949	1.0
Total	1,782	1.9
TOTAL	6,262	6.8
NONFARM AREA		
Forest land:		
Total nonreserved	43,013	46.9
Special use areas:		
Urban, exclusive of agriculture	1,494	1.6
Transportation facilities	517	.6
Total	2,011	2.2
National parks	192	.2
Provincial parks	4,743	5.2
Indian reserves	670	.7
Total	7,616	8.3
Land unaccounted for	34,852	38.0
TOTAL	85,481	93.2
TOTAL LAND AREA	91,743	100.0

^aData for farms with agricultural sales of \$50 or more.

NOTE: See Appendix A for discussion of other terms and data sources.

SPECIAL USE AREA

Four special uses are identified: urban and urban related uses, national parks, provincial parks, and Indian reserves. These areas account for 8.3 percent of Ontario's total land area and, 16.7 percent of Quebec's. Quebec leads significantly in area of national and provincial parks: 21.2 million ha as compared to 4.9 million ha in Ontario. These park areas account for 5.4 and 15.6 percent of the land area in Ontario and Quebec respectively. Indian reserves, another class in this category of land uses, occupy 0.7 and 0.06 percent of the total land area in Ontario and Quebec respectively.

Urban and urban related uses include the area of incorporated cities, towns and villages with populations of 2,500 and over (minus the farmland

Table 2.—Summary of Major Land Uses, Quebec, 1976

Major land use	Hectares, '000	% of total land area
FARM AREA^a		
Improved farmland:		
Cropland	1,848	1.4
Improved pasture	470	.3
Other	79	.1
Total	2,397	1.8
Unimproved farmland:		
Woodland	1,160	.9
Other	452	.3
Total	1,612	1.2
TOTAL	4,009	3.0
NONFARM AREA		
Forest land:		
Total nonreserved	69,508	51.2
Special use areas:		
Urban area, exclusive of agriculture	1,163	.9
Transportation facilities	291	.2
Total	1,454	1.1
National parks	78	.1
Provincial parks & forests	21,103	15.5
Indian reserves	78	.1
Total	22,713	16.7
Land unaccounted for	39,551	29.1
TOTAL	131,772	97.0
TOTAL LAND AREA	135,781	100.0

^aData for farms with agricultural sales of \$50 or more.

NOTE: See Appendix A for a discussion of other terms and data sources.

within the urban centers), and the area of surfaced roadways, railway right-of-ways and of federal Department of Transport owned airports. The following qualifications must be made before using these estimates. The land area within the boundaries of incorporated urban centers is larger than the actual built-up area, often including some rural land. Additional built-up areas such as rural (including year-round and summer) residences, unincorporated villages and hamlets, and incorporated towns and villages with less than 2,500 population are *not included in the total*. The area of transportation facilities as calculated *excludes*: some road allowances set aside in survey plats which are neither surfaced nor in use; railway spurs, and some airport sites (particularly municipal and private airfields).

The total area of urban and urban related uses is estimated at 2.0 million ha or 2.2 percent of the total land area in Ontario, and 1.5 million ha or 1.1 percent in Quebec, based on the above qualifications and the assumptions outlined in Appendix A.

LAND UNACCOUNTED FOR

Thirty-eight percent of the land area in Ontario and 29.1 percent in Quebec has not been specifically accounted for elsewhere in Tables 1 and 2. As stated in Appendix A, this category includes among others:

1. Waste land such as open muskeg, swamp and rock;
2. Forested areas not capable of producing stands of trees at least 4 inches (approximately 10 cm) dbh (diameter at breast height) on 10 percent of the area;
3. Forested areas excluded from the categories of "Forest Land," "National Parks," and "Provincial Parks." These could be forests in conservation areas, nature preserves, etc., and small, scattered patches of forest (other than farm woodland);
4. Other federal and provincial institutional lands (e.g., CFB Camp Borden, research stations);
5. Unincorporated urban areas (including rural residences) or incorporated urban areas with populations less than 2,500;
6. Transportation use areas not included in the above "Transportation Facilities" category; and
7. Power transmission corridors.

AGRICULTURAL USE OF LAND¹

Farmland accounts for a relatively minor proportion of the total provincial land areas. Farmland which accounted for 9.8 and 5.0 percent of the total land area in Ontario and Quebec respectively in 1951, accounted for 6.8 and 3.0 percent respectively by 1976.

Over the 25-year period, 1951-76 Ontario's total farmland decreased almost 2.2 million ha or 25.9 percent—from 8,449,857 ha to 6,261,705.

Quebec's farmland area declined almost 2.8 million ha or 41.0 percent over the same period—from 6,793,216 ha in 1951 to 4,008,945 ha in 1976.

Total farmland in Ontario and Quebec declined in all five time periods (1951-56, 1956-61, 1961-66, 1966-71 and 1971-76) (Table 3). Both provinces showed declines peaking in 1966-71. Decreases were at a minimum in 1971-76 in Ontario, and in 1951-56 in Quebec. In Ontario, 5-year decreases in total farmland have ranged between 198,000 ha and 754,000 ha, while in Quebec they have ranged between 355,000 ha and 844,000 ha. For all periods Quebec lost proportionally more farmland than Ontario—and this from a smaller total farmland base.

The period, 1971-76 saw Ontario's cropland increase by 327,777 ha, and Quebec's, by 92,073 ha. Ontario's cropland also increased during 1961-66; but, in Quebec there have been no other increases over a 5-year period.

The period, 1966-71, had the greatest decreases of cropland in both provinces—203,496 ha in Ontario and 335,559 ha in Quebec. These cropland decreases accounted for 27.0 percent of Ontario's total decrease in farmland and 39.8 percent of Quebec's during that 5-year period.

FARM SIZE

There has been a greater relative decrease in the number of farms than in total farmland over the period, 1951-76. Whereas Ontario farms numbered 149,920 in 1951, by 1976 they numbered 88,801—a decline of 40.8 percent. In Quebec, the number of farms decreased 61.6 percent from 134,336 in 1951 to only 51,587 in 1976.

¹Data for 1976 for farms with agricultural sales of \$50 or more.

NOTE: See Appendix B for discussion of census definition changes and Appendix C for other census definitions.

Table 3.—Changes in Farmland Area, 1951-76

	1951-56		1956-61		1961-66		1966-71		1971-76		1951-76	
	Hectares	% of 1951	Hectares	% of 1956	Hectares	% of 1961	Hectares	% of 1966	Hectares	% of 1971	Hectares	% of 1951
ONTARIO												
Improved land:												
Cropland	-172,353	-4.9	-92,693	-2.8	149,079	4.6	-203,496	-6.0	327,777	10.3	8,314	0.2
Pasture	95,239	7.3	-70,852	-5.0	-145,652	-10.9	-242,507	-20.4	-202,241	-21.4	-566,013	-43.2
Summer fallow	85	.1	-36,070	-26.7	-6,066	-6.1	3,263	3.5	-20,746	-21.5	-59,534	-44.1
Other	28,025	14.5	-18,605	-8.4	-8,942	-4.4	-18,482	-9.5	-21,934	-12.5	-39,938	-20.6
Total	-49,004	-1.0	-218,220	-4.3	-11,581	-.2	-461,222	-9.5	82,856	1.9	-657,171	-12.8
Unimproved land:												
Woodland	-207,969	-13.3	-32,894	-2.4	-171,251	-13.0	-216,020	-18.8	-98,399	-10.6	-726,533	-46.6
Other	-147,877	-8.4	-275,439	-17.2	-121,678	-9.1	-76,683	-6.3	-182,771	-16.1	-804,448	-45.9
Total	-355,846	-10.7	-308,333	-10.4	-292,929	-11.1	-292,703	-12.4	-281,170	-13.6	-1,530,981	-46.2
TOTAL	-404,850	-4.8	-526,553	-6.5	-304,510	-4.1	-753,925	-10.5	-198,314	3.1	-2,188,152	-25.9
QUEBEC												
Improved land:												
Cropland	-97,463	-4.2	-136,064	-6.1	-18,972	-.9	-335,559	-16.0	92,290	5.2	-495,768	-25.9
Pasture	-17,180	-1.6	-133,471	-12.5	-77,623	-8.3	-165,530	-19.3	-222,551	-32.1	-616,355	-56.7
Summer fallow	8,093	42.5	-8,392	-30.9	985	5.3	13,311	67.4	-12,610	-38.2	1,387	7.3
Other	25,964	20.9	-31,924	-21.3	577	.5	10,511	8.9	-70,549	-54.7	-65,421	-52.8
Total	-80,586	-2.3	-309,851	-8.9	-95,033	-3.0	-477,267	-15.5	-213,420	-8.2	-1,176,157	-32.9
Unimproved land:												
Woodland	-403,284	-17.0	-152,364	-7.7	-292,918	-16.1	-274,607	-18.0	-94,026	-7.5	-1,217,199	-51.2
Other	129,254	15.3	-230,460	-23.7	-143,168	-19.3	-91,876	-15.3	-54,665	-28.9	-390,915	-46.4
Total	-274,030	-8.5	-382,824	-13.0	-436,086	-17.0	-366,483	-17.2	-148,691	-8.4	-1,608,114	-50.1
TOTAL	-354,616	-5.2	-692,675	-10.8	-531,119	-9.2	-843,750	-16.2	-362,111	-8.3	-2,784,271	-41.0

Source: Census of Agriculture, 1951, 1956, 1961, 1966, 1971, 1976. 1951 and 1956 data for farms (a) three acres or more in size; or (b) from 1 to 3 acres in size with agricultural production valued at \$250 or more. 1961 to 1976 data for farms one acre or more in size with sales of agricultural production of \$50 or more.

NOTE: See also Appendix B for definition changes of a census farm between 1951 and 1976 and Appendix C for definition of census terms.

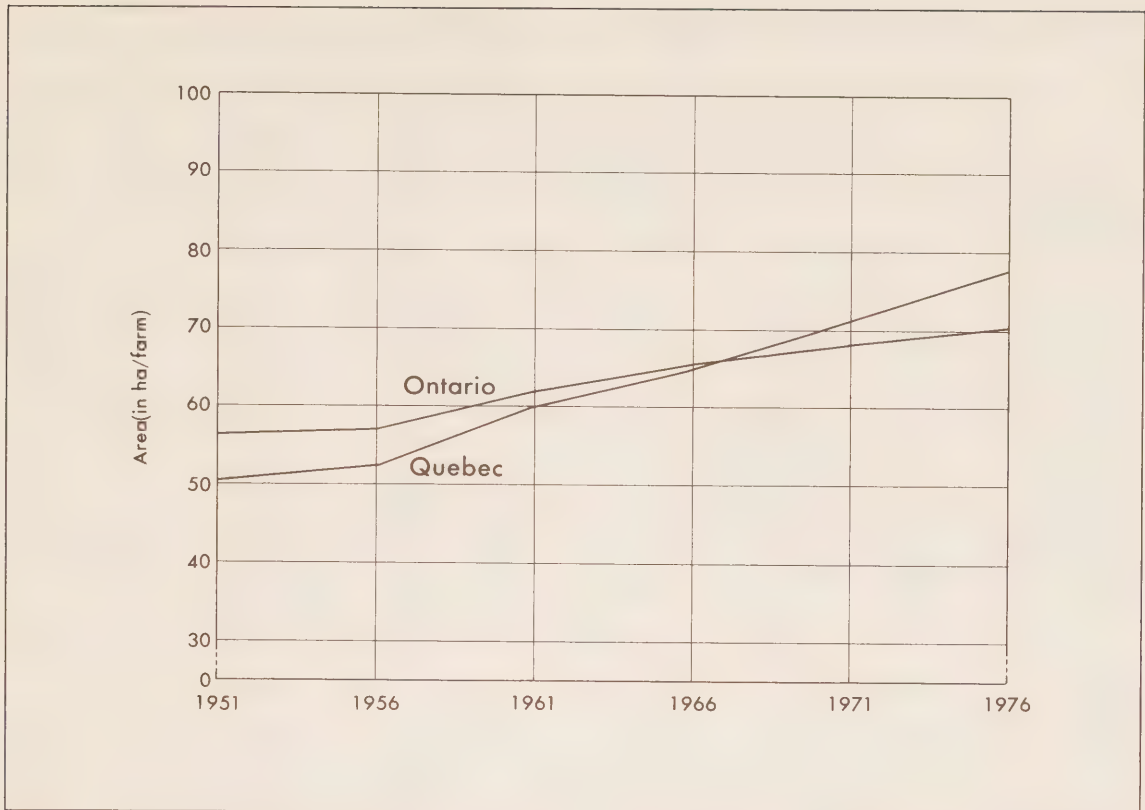


Figure 3 - Average Size of Census Farms

Commensurate with the above changes in farm acreage and farm numbers, there has been an increase in the average size of farms in the provinces (Figure 3). Although Quebec farms were smaller than Ontario's in 1951 (average size in Quebec was 50.6 ha and in Ontario, 56.4 ha), this situation had reversed by 1971. Quebec farms increased over 27 ha in average size to 77.7 ha from 1951-76 while farms in Ontario increased about 14 ha in average size to 70.5 ha. This increase in Quebec's farm size reflects a continuing reliance on extensive agriculture in the areas outside the Montreal plain.

Table 4 gives the distribution of farms by size groups for 1951 and 1976. The number of farms less than 1.2 ha in size *increased* during this period, partly as a result of a change in the definition of a census farm since 1951 (Appendix B). Other small and medium-sized farms, however, *decreased* in number from 1951 to 1976. While the numbers of farms 1.2 to 96.7 ha in size decreased 30 to 60 percent in Ontario and 50 to 80 percent in Quebec, the number of farms 97.1 to 161.5 ha in both provinces decreased 10 percent or less.

The decline in small-sized farms (1.2 to 27.9 ha) can be attributed partly to the elimination of small farm units and their amalgamation into larger, more efficient agricultural operations.

Table 4.—Farm Size Characteristics, 1951 and 1976

Farm size, acres & hectares ^a		No. of farms		% change 1951-76	% of total farms	
		1951	1976		1951	1971
ONTARIO						
Under 3	(Under 1.2)	652	1,426	+118.7	.4	1.6
3-9	(1.2-3.6)	6,733	3,387	-49.7	4.5	3.8
10-69	(4.0-27.9)	26,243	17,857	-32.0	17.5	20.1
70-129	(28.3-52.2)	53,459	23,035	-56.9	35.6	26.0
130-179	(52.6-72.4)	24,893	11,579	-53.4	16.6	13.1
180-239	(72.8-96.7)	18,780	11,200	-40.4	12.5	12.6
240-399	(97.1-161.5)	14,265	12,782	-10.4	9.5	14.4
400-559	(161.9-226.2)	3,385	4,457	+31.7	2.3	5.0
560-759	(226.6-307.2)	992	1,782	+79.6	.7	2.0
760-1119	(307.6-452.8)	368	900	+144.6	.3	1.0
1120-1599	(453.2-647.1)	101	268	+165.3	.1	.3
1600 & over	(647.5 & over)	49	128	+161.2	..	.1
Total		149,920	88,801	-40.8	100.0	100.0
QUEBEC						
Under 3	(Under 1.2)	222	539	+142.8	.2	1.0
3-9	(1.2-3.6)	2,258	1,111	-50.8	1.7	2.2
10-69	(4.0-27.9)	21,377	6,835	-68.0	15.9	13.3
70-129	(28.3-52.2)	58,286	12,443	-78.6	43.3	24.1
130-179	(52.6-72.4)	21,983	8,438	-61.6	16.4	16.4
180-239	(72.8-96.7)	17,543	8,182	-53.3	13.1	15.9
240-399	(97.1-161.5)	10,257	9,452	-7.9	7.6	18.3
400-559	(161.9-226.2)	1,832	3,091	+68.7	1.4	6.0
560-759	(226.6-307.2)	402	1,012	+151.7	.3	2.0
760-1119	(307.6-452.8)	111	381	+24.3	.1	.7
1120-1599	(453.2-647.1)	39	73	+87.2	..	.1
1600 & over	(647.5 & over)	26	30	+15.4
Total		134,336	51,587	-61.6	100.0	100.0

^aApproximate metric equivalents in hectares in brackets.

Sources: *Census of Canada, 1951*, Vol. VI, Table 16; and unpublished data for farms with agricultural sales of \$50 or more, *Census of Agriculture, 1976*.

Farms over 161.9 ha in size increased in number in both provinces from 1951 to 1976 as more farmers sought additional land through purchases and rentals to complement their farm operations. The percentage increases in numbers of large-sized farms ranged from 30 to 165 percent in Ontario and from 15 to 150 percent in Quebec. The absolute change in the number of very large farms, however, was not great: in Ontario the number of farms 161.9 ha and over in size increased from 4,895 in 1951 to 7,535 in 1976, and in Quebec from 2,410 to 4,587.

Both provinces show a concentration of medium-sized farms in all operator age groups—about 50 to 60 percent of all farms in each age group are 28.3 to 96.7 ha in size (Table 5).

Table 5.—Distribution of Farms by Size Class and Age of Operator,
Ontario and Quebec, 1976

Age of operator	Farm size, acres & hectares ^a			Total farms	
	Under 70 (28.3)	70-239 (28.3-96.7)	240 & over (97.1)		
ONTARIO	%	%	%	no.	%
Under 25	23.2	56.3	20.5	1,791	100.0
25-34	25.7	51.0	23.3	12,642	100.0
35-44	25.9	49.2	24.9	19,904	100.0
45-54	23.3	50.9	25.8	24,516	100.0
55-59	23.7	53.4	22.9	10,344	100.0
60-64	26.3	54.6	19.1	8,308	100.0
65-69	29.1	54.1	16.8	5,478	100.0
70 & over	32.9	52.6	14.5	5,818	100.0
All ages	25.5	51.6	22.9	88,801	100.0
QUEBEC					
Under 25	17.1	54.8	28.1	1,207	100.0
25-34	16.3	53.7	30.0	8,119	100.0
35-44	14.4	55.0	30.6	11,882	100.0
45-54	13.7	56.6	29.7	15,351	100.0
55-59	16.6	58.7	24.7	6,442	100.0
60-64	21.4	59.2	19.4	4,404	100.0
65-69	25.4	59.4	15.2	2,260	100.0
70 & over	28.8	56.9	14.3	1,922	100.0
All ages	16.5	56.3	27.2	51,587	100.0

^aApproximate metric equivalents in hectares in brackets.

Source: *Census of Agriculture, 1976*, unpublished data for farms with agricultural sales of \$50 or more.

In Ontario, small farms (less than 28.3 ha) account for 22 to 30 per cent of farms in each age category. The fact that small farms are more prevalent among older farmers (over 60) and large farms (97.1 ha and over), among young and middle-aged farmers (25 to 54) suggests that: beginning operators start with smaller farms to establish themselves as farmers; middle-aged farmers need larger farms for their large-scaled agriculture operations; and older farmers reduce their operations to preretirement level operations (or have smaller operations because they never operated large farm units).

Proportionally, Quebec has fewer small farms than Ontario. Small farms (under 28.3 ha) in Quebec, account for less than 18 percent in the operator age groups up to 59 years and between 20 and 30 percent of the farms for older operators. On the other hand, larger farms (97.1 ha and over) are more prevalent among young and middle-aged farmers (up to 54 years of age), where they account for over 25 percent of the farms in those age groups, than among older farmers in Quebec and even among similar age groups in Ontario.

Table 6.—Farmland in Ontario and Quebec, 1951-76

	1951	1956	1961	1966	1971	1976
ONTARIO						
	<u>hectares</u>					
Improved land:						
Cropland	3,498,629	3,326,276	3,233,583	3,382,662	3,179,166	3,506,943
Pasture	1,309,298	1,404,537	1,333,685	1,188,033	945,526	743,285
Summer fallow	135,069	135,154	99,084	93,018	96,281	75,535
Other	193,779	221,804	203,199	194,257	175,775	153,841
Total	5,136,775	5,087,771	4,869,551	4,857,970	4,396,748	4,479,604
Unimproved land:						
Woodland	1,559,162	1,351,193	1,318,299	1,147,048	931,028	832,629
Other	1,753,920	1,606,043	1,330,604	1,208,926	1,132,243	949,472
Total	3,313,082	2,957,236	2,648,903	2,355,974	2,063,271	1,782,101
TOTAL	8,449,857	8,045,007	7,518,454	7,213,944	6,460,019	6,261,705
QUEBEC						
Improved land:						
Cropland	2,343,275	2,245,812	2,109,748	2,090,776	1,755,217	1,847,507
Pasture	1,086,669	1,069,489	936,018	858,395	692,865	470,314
Summer fallow	19,054	27,147	18,755	19,740	33,051	20,441
Other	123,958	149,922	117,998	118,575	129,086	58,537
Total	3,572,956	3,492,370	3,182,519	3,087,486	2,610,219	2,396,799
Unimproved land:						
Woodland	2,377,261	1,973,977	1,821,613	1,528,695	1,254,088	1,160,062
Other	842,999	972,253	741,793	598,625	506,749	452,084
Total	3,220,260	2,946,230	2,563,406	2,127,320	1,760,837	1,612,146
TOTAL	6,793,216	6,438,600	5,745,925	5,214,806	4,371,056	4,008,945

Source: *Census of Agriculture, 1951, 1956, 1961, 1966, 1971, 1976*. 1951 and 1956 data for farms (a) three acres or more in size; or (b) 1 to 3 acres in size with agricultural production valued at \$250 or more. 1961 to 1976 data for farms one acre or more in size with sales of agricultural production of \$50 or more.

NOTE: See also Appendix B for definition changes of a census farm between 1951 and 1976 and Appendix C for definition of census terms.

USE OF FARMLAND

Improved farmland accounted for 60.8 percent of Ontario's 8.4 million ha of farmland and 52.6 percent of Quebec's 6.8 million ha in 1951 (Table 6). By definition, improved land is the aggregate of cropland, improved pasture, summer fallow, and other improved land (e.g., barnyards, cultivated lands that were lying idle). These four farmland categories in 1951 totaled 5,136,775 ha in Ontario and 3,572,956 ha in Quebec.

The area of improved land declined in both provinces over the next 20 years; however, in 1971-76 improved land increased in Ontario as the result of a significant increase in the area under crops but continued to decline in Quebec. By 1976 Ontario's improved land decreased by 12.8 percent to 4,479,604 ha and Quebec's by 32.9 percent to 2,396,799 ha since 1951. Some of this decline in improved land is attributable to farm abandonment. But part is also a result of encroachment by other uses on farm and other rural lands; direct urban expansion as well as urban-related and urban infra-structure uses, such as rural residences and transportation facilities, take increasing amounts of rural land.

Unimproved farmland, comprised of woodland and other unimproved land (e.g., native pasture, wasteland, marsh), has declined in both

provinces at a faster rate than improved farmland. Between 1951 and 1976 Ontario's unimproved farmland decreased 46.2 percent from 3.3 million ha to 1.8 million ha; Quebec's decreased 49.9 percent from 3.2 million ha to 1.6 million ha. Three factors account for much of the decrease in unimproved farmland: upgrading of farmland from unimproved to improved, farm abandonment, and urban encroachment (particularly in the form of rural residences on the more rugged land).

As a net result of the above trends, the total area of farmland in the provinces declined 25.9 and 41.0 percent in Ontario and Quebec respectively from 1951 to 1976. But, the proportion of improved farmland to total farmland increased from 1951 to 1976: in Ontario from 60.8 to 71.5 percent and in Quebec from 52.6 to 59.8 percent (Figure 4).

CROPLAND

Cropland, the largest component of improved farmland, accounted for 68.1 percent of the improved farmland in Ontario in 1951. Cropland area declined over the next 20 years from less than 3.5 million ha to less than 3.2 million ha (there was an increase in 1961-66). The significant increase of 327,777 ha (10.3 percent) since 1971 in Ontario's cropland resulted in a total of 3,506,943 ha in 1976—just over 8,000 ha more than in 1951. Cropland accounted for a larger proportion of total farmland in 1976—56.0 percent—than in 1951 (41.4 percent).

Cropland in Quebec, which accounted for 65.6 percent of the improved land declined 25 percent from 1951 to 1971—a decrease of almost one-half million ha from a 1951 total of about 2.3 million ha. Since 1971, Quebec has also experienced an increase in cropland (although smaller than the increase in Ontario). From 1971 to 1976 cropland increased 92,073 ha (5.2 percent) to 1,847,507 ha. The net result, however, has been a decline of 25.9 percent in Quebec cropland from 1951 to 1976. In 1951, 34.5 percent of the total farmland was in crops, in 1976 46.1 percent.

The proportion in cropland increased as other farmland was withdrawn from agriculture at a faster rate than cropland and as other farmland areas were upgraded to cropland.

IMPROVED PASTURE

Improved pasture declined from 1951 to 1976, by 43.2 percent in Ontario, and 56.7 percent in Quebec. Improved pasture, considered by some to be interchangeable with cropland, has decreased partly due to a shift of this land into crops. Many livestock enterprises are concentrating more on intensive cultivation of forage crops than on grazing of the animals. The remainder of the decline in improved pasture resulted from shifts out of agriculture or to less intensive agricultural uses (e.g., scrub land, unimproved pasture).

WOODLAND

Woodland, often used as farm woodlots for timber on a regular or irregular harvest basis, supply the farmer with cash income. Maple woodlots on farms are frequently tapped for sap. According to the 1971 census 8,286 Quebec farmers tapped over 12 million trees while 1,536 Ontario farmers tapped 666,000 trees (no comparable data was collected in 1976).

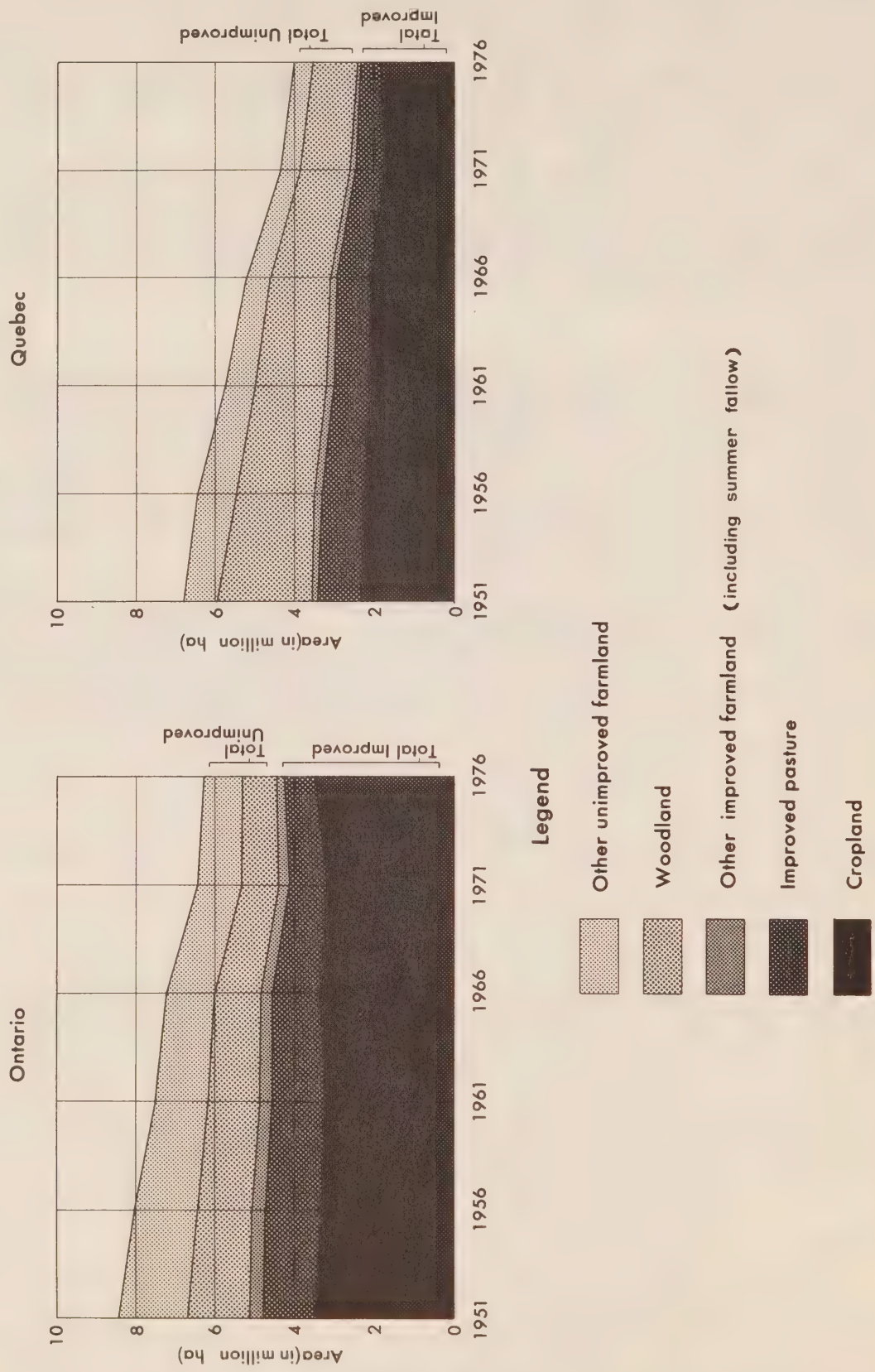


Figure 4 - Farmland in Ontario and Quebec, 1951-1976

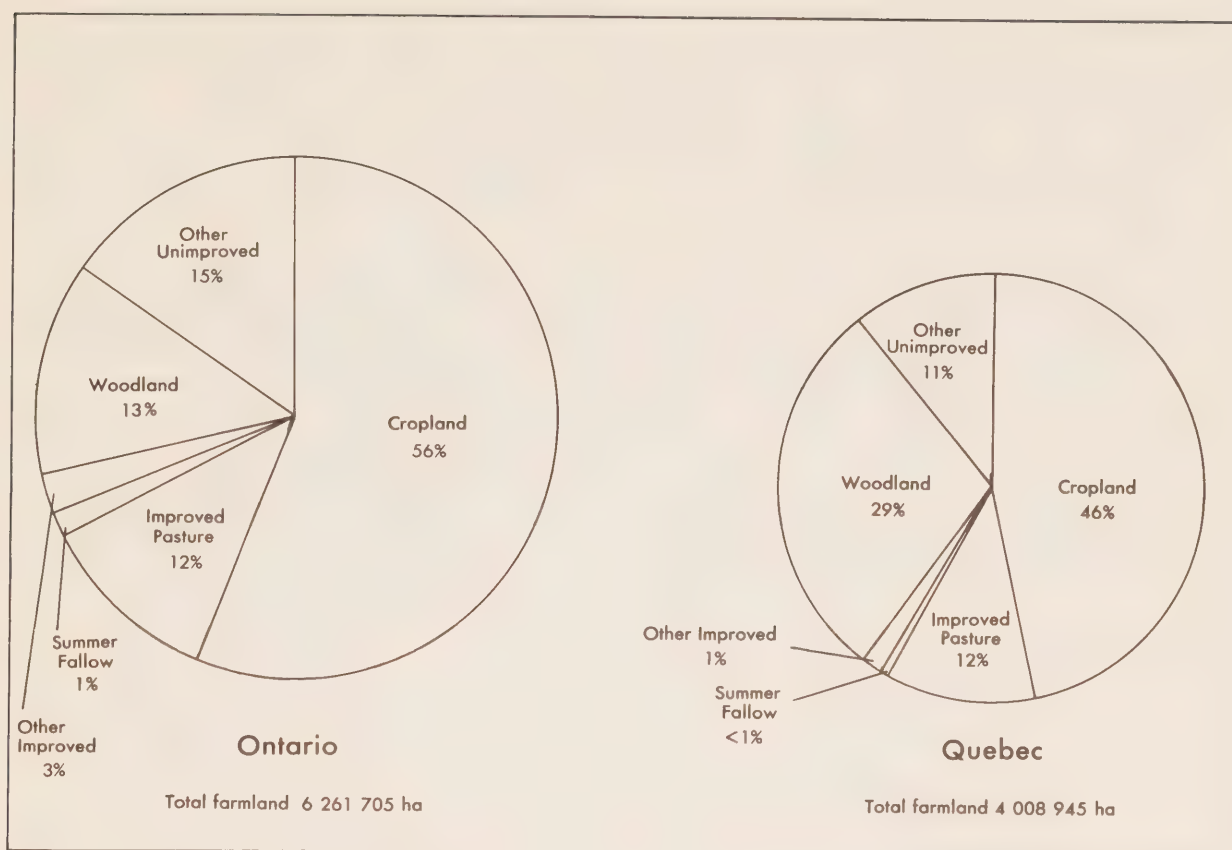


Figure 5 - Farmland Ontario and Quebec, 1976

The total area of woodland on farms in Ontario and Quebec decreased from 1951 to 1976. By 1976 farm woodland in Quebec accounted for 28.9 percent (1.2 million ha) of the total farmland area, and in Ontario, 13.3 percent (0.8 million ha).

SUMMARY

Figure 5 illustrates the status of farmland in 1976 in Ontario and Quebec. Cropland, the largest farmland category in both provinces, and improved pasture, together account for 68 percent (4.3 million ha) of the total farmland in Ontario and 58 percent (2.3 million ha) in Quebec—almost half as much as Ontario.

Figure 6 illustrates the breakdown of cropland by major crop uses. In both Ontario and Quebec field crops are the major crop; their areas comprise over 97 percent of the cropland in each province with other crops (i.e., vegetables, tree and small fruits, greenhouses and nurseries) accounting for the remaining 3 percent.

REGIONAL CONCENTRATIONS OF FARMLAND USES

There are significant concentrations of farmland (over 60 percent of county area) in Ontario in the extreme eastern counties, along the Lake Ontario shore and west of Hamilton (Figure 7). Total farmland in all the Golden Horseshoe counties (at the western tip of Lake Ontario) is less than 60 percent of the county area. For all of the counties on the Shield, however, less than 10 percent of the land area is in farms.

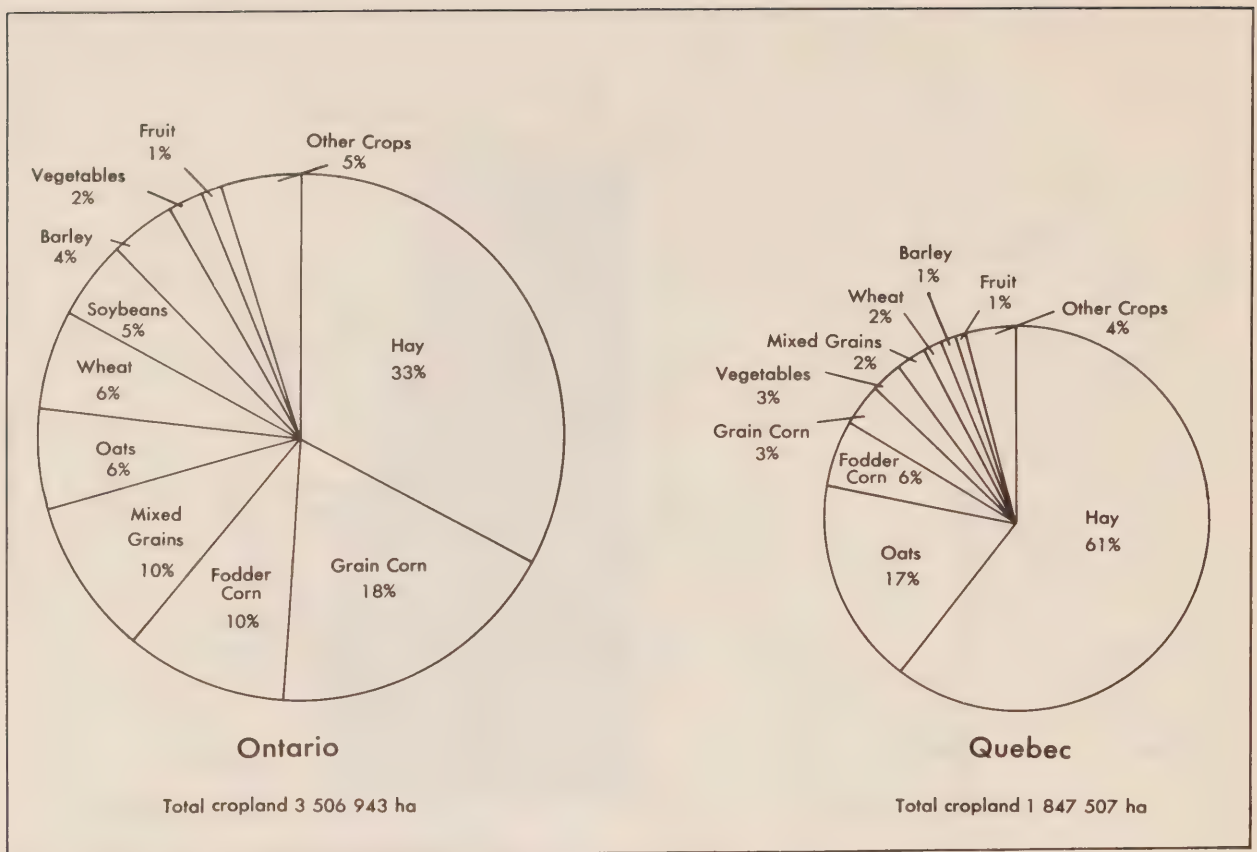


Figure 6 - Cropland in Ontario and Quebec, 1976

Many Quebec counties south of the St. Lawrence River, west of Quebec City have 61 to 80 percent of the land area in farms and a few have over 80 percent (Figure 8). Urban demands on land cause a drop in the proportion of county area that is farmland around Montreal. East of Quebec City and in the Gaspé farmland accounts for 10 to 40 percent of the total county land areas. Farmland along the north shore of the St. Lawrence River accounts for only 10 to 20 percent of the land area. Farmland in these counties is concentrated in the southern parts along the St. Lawrence River, whereas the county areas extend into the Laurentians and Canadian Shield to the north.

Cropland in Ontario is concentrated in the counties to the west and south-west of Lake Ontario (Figure 9) which have 61 to 80 percent of the total farmland in crops. The combined cropland of the nine counties of Essex, Kent, Elgin, Lambton, Middlesex, Perth, Oxford, Brant, and Haldimand-Norfolk (1.3 million ha) accounts for 37 percent of the total cropland in Ontario; yet the total land area of these counties is only 2.3 percent of the land area of the Province.

Secondary concentrations of cropland in Ontario (where cropland accounts for 41 to 60 percent of total farmland in a county) occur to the north and north-west of Lake Ontario and in Eastern Ontario.

Cropland in Quebec is concentrated around Montreal (particularly to the east and south) where most of the counties have over 60 percent of the farmland in crops (Figure 10). The 14 counties of Soulanges, Beauharnois, Chateauguay, Ile-de-Montreal, and Ile-Jesus, Laprairie, Napierville, St. Jean, L'Assomption, Vercheres, Chambly, St. Hyacinthe, Rouville, Iberville, and Bagot account for

18.9 percent (349,000 ha) of the total cropland in Quebec, but only for 0.6 percent of the total provincial area. In other words, one-fifth of Quebec's cropland is located within a semicircle of less than 80 km radius to the east and south of Montreal. Cropland accounts for 41 to 60 percent of the total farmland elsewhere along the St. Lawrence River. The rest of the Quebec counties have 40 percent or less of their total farmland in crops.

Figures 11 and 12 show more precisely the provincial distributions of cropland in 1976. Large areas of cropland occur in the western and southwestern parts of Southern Ontario. Various voids and less dense areas occur around several urban centers in Southern Ontario and in areas of poorer physical conditions for crop growth. Dispersed, small pockets of cropland appear in the northern part of the Province.

In Quebec, cropland is generally concentrated along both shores of the St. Lawrence. Dispersed cropland acreages occur to the south and major extensions of cropland to the north occur around Lake St. Jean, along the river valleys from the Ottawa River, and in the Clay Belts of Northern Quebec at the boundary with Northern Ontario.

Improved pasture is found in surprisingly uniform proportions throughout most counties of Ontario and Quebec. Most of the counties have 10 to 25 percent of the farmland in pasture with the exception of some counties around Montreal, between Hamilton and Windsor, and in the Shield.

Regional variations are evident in farming activities. Figures 13 and 14 show the proportion of farms (having sales of \$2,500 or more) in the county specializing¹ in grain corn, other small grains, wheat or other field crops in 1976. The favorable climatic and soil conditions of Ontario's southwestern counties explain the relatively high proportion (up to 70 percent) of grain corn, other small grains, wheat or other field crops speciality farms, particularly in the counties from Essex to Brant.

While Quebec's major pocket of grain corn, other small grains, wheat or other field crops speciality farms is in about half a dozen counties to the east of Montreal; not more than 30 percent of the farms in any of these counties specialize in these crops.

The percentage of grain corn, other small grains, wheat, or other field crops speciality farms in the other counties of both provinces ranges between 5 and 15 percent in Ontario and up to 10 percent in Quebec. In 1976 there were 16,200 and 2,870 grain corn, other small grains, wheat or other field crops speciality farms (with sales of \$2,500 or more) in Ontario and Quebec respectively.

The predominance of dairy or livestock (cattle, hogs or sheep) speciality farms in most counties of both provinces is obvious from Figures 15 and 16. In Quebec, of the total 37,270 farms (with sales of \$2,500 or more), 26,583 farms (71.3 percent) are dairy or livestock speciality farms; in Ontario 33,960 farms (50.2 percent) of a total of 67,613 farms specialize in these products. Half of the counties in Ontario and Quebec have over 70 percent of all farms specializing in either dairying or livestock. Only 10 percent of the counties in Quebec and 20 percent in Ontario have less than 40 percent of the farms as dairy or livestock speciality farms.

¹The criterion for specializing is that a farm would derive 51.0 percent or more of its total potential sales from a particular commodity. *Census of Agriculture, 1976.*

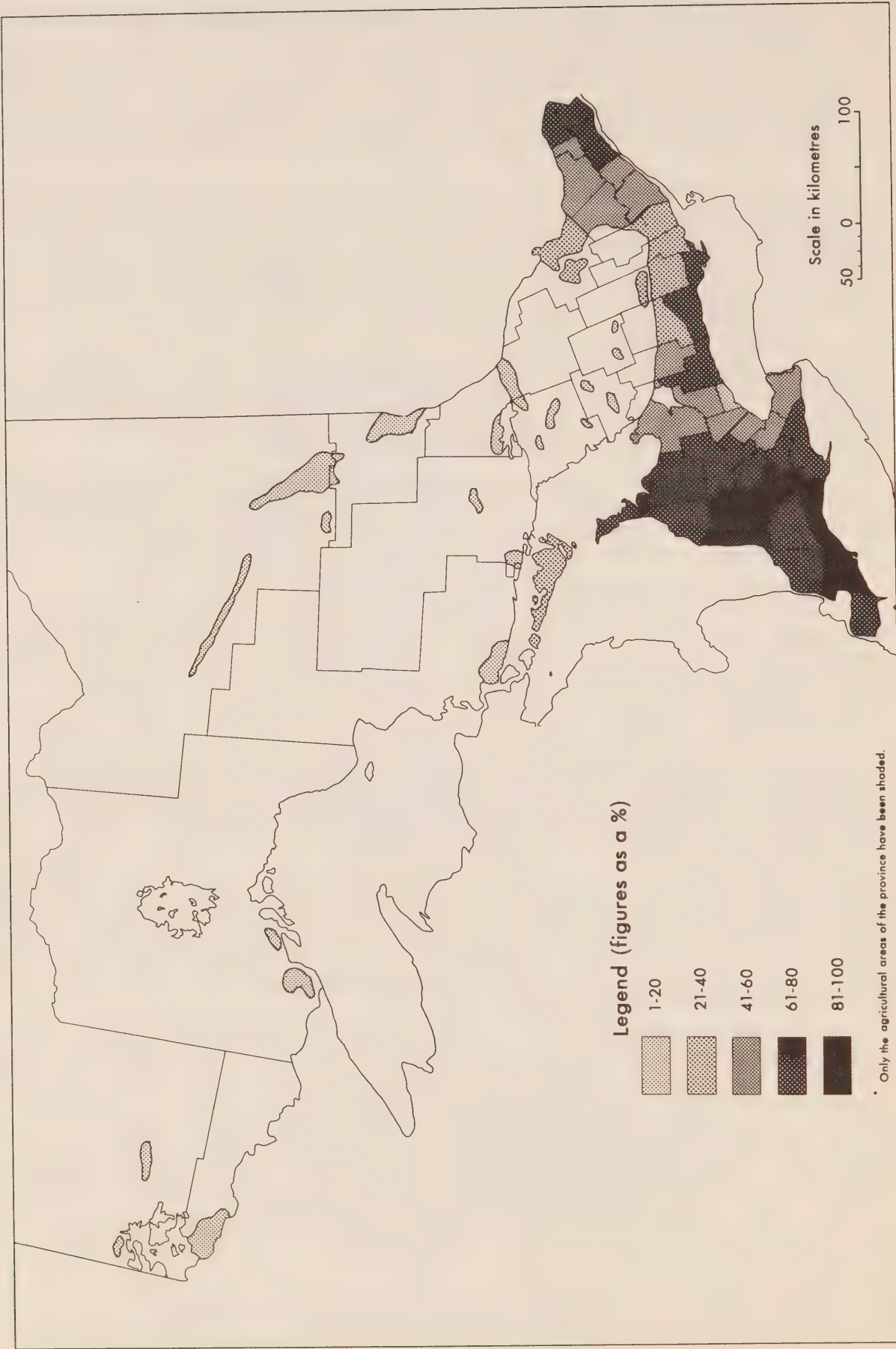


Figure 7 - All Farmland as a percent of Total County Area, Ontario, 1976

Source: Unpublished 1976 Census of Agriculture data

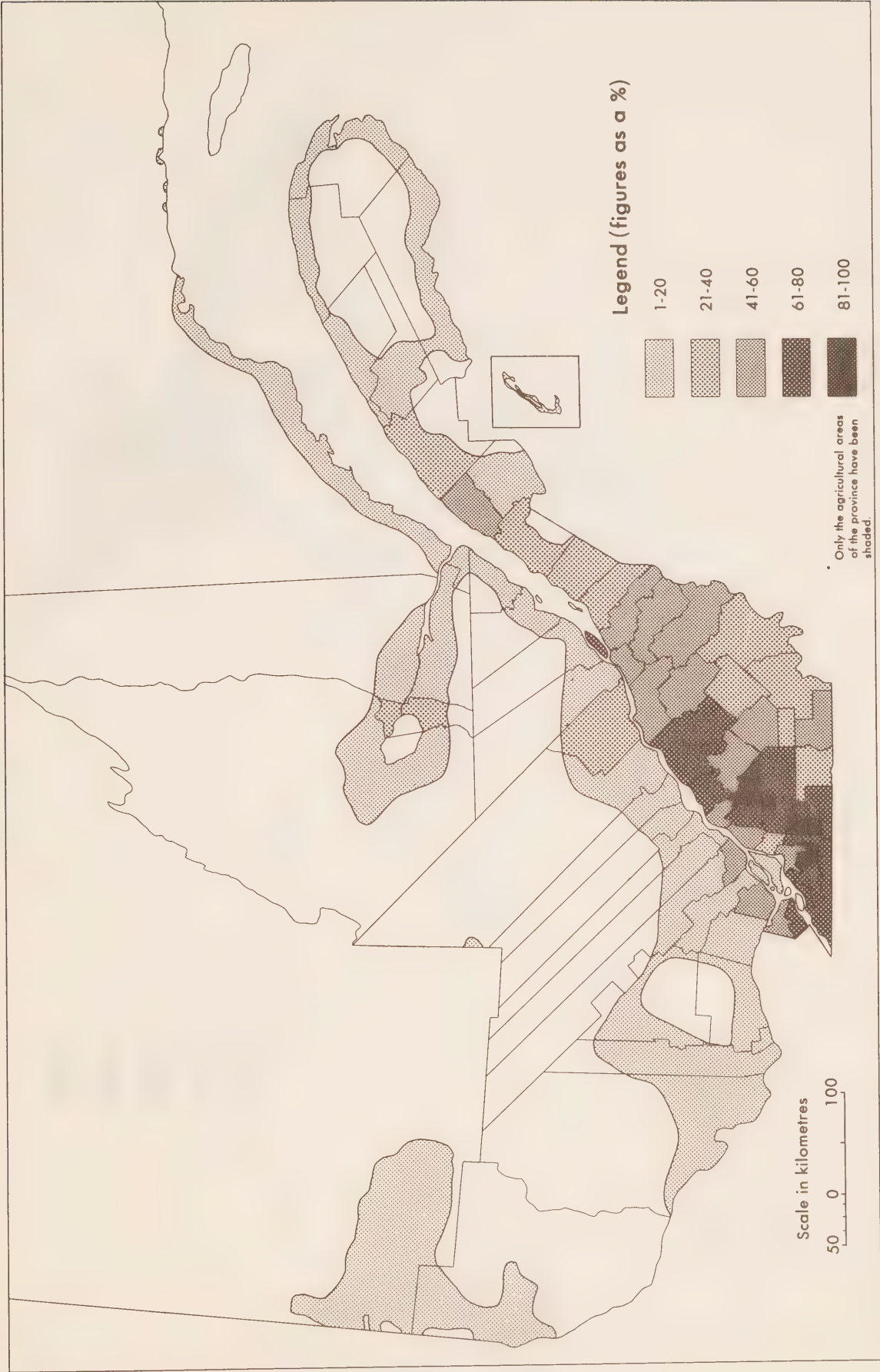


Figure 8 - All Farmland as a percent of Total County Area, Quebec, 1976

Source: Unpublished 1976 Census of Agriculture data

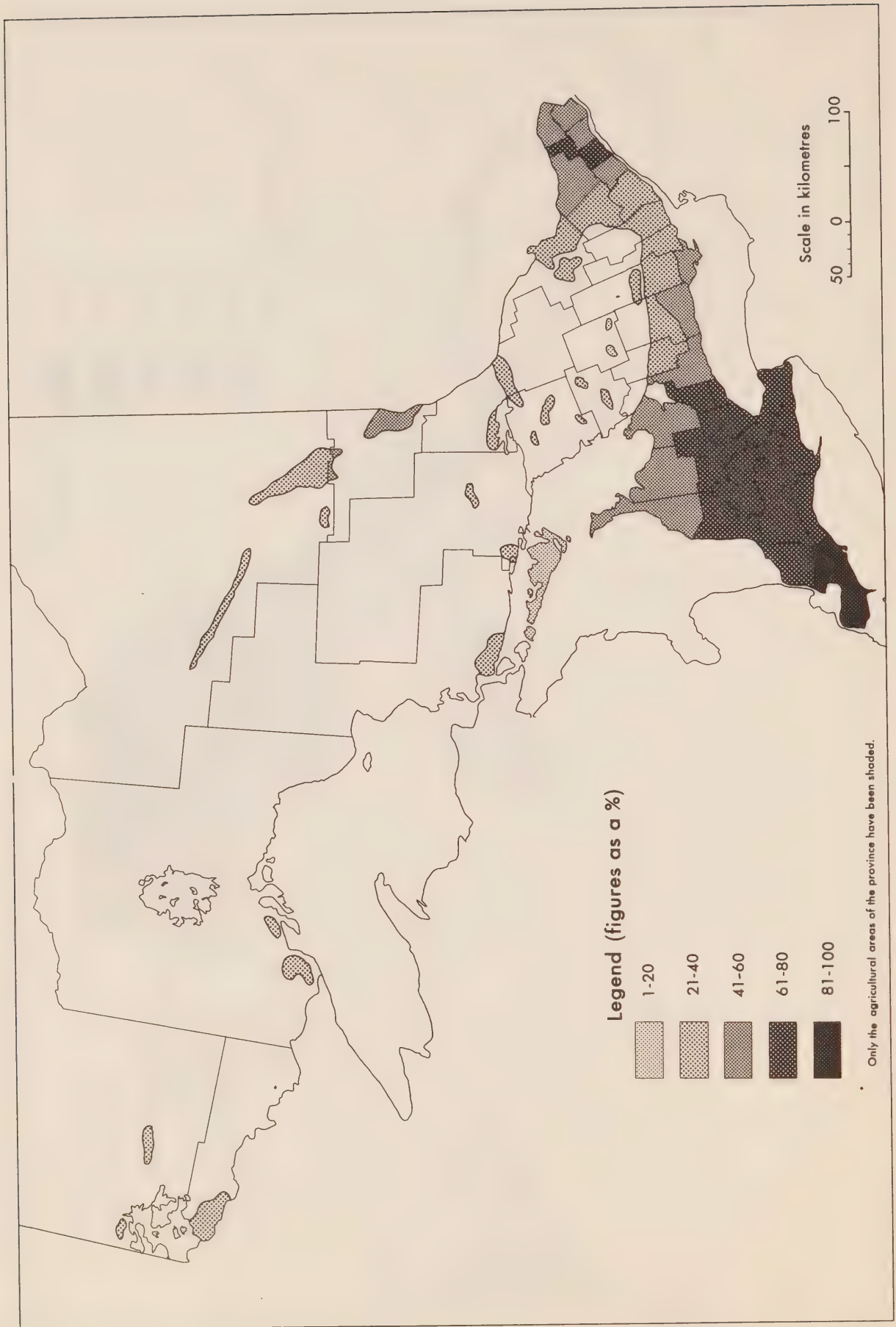


Figure 9 - Cropland as a percent of Total Farmland, Ontario, 1976

Source: Unpublished 1976 Census of Agriculture data

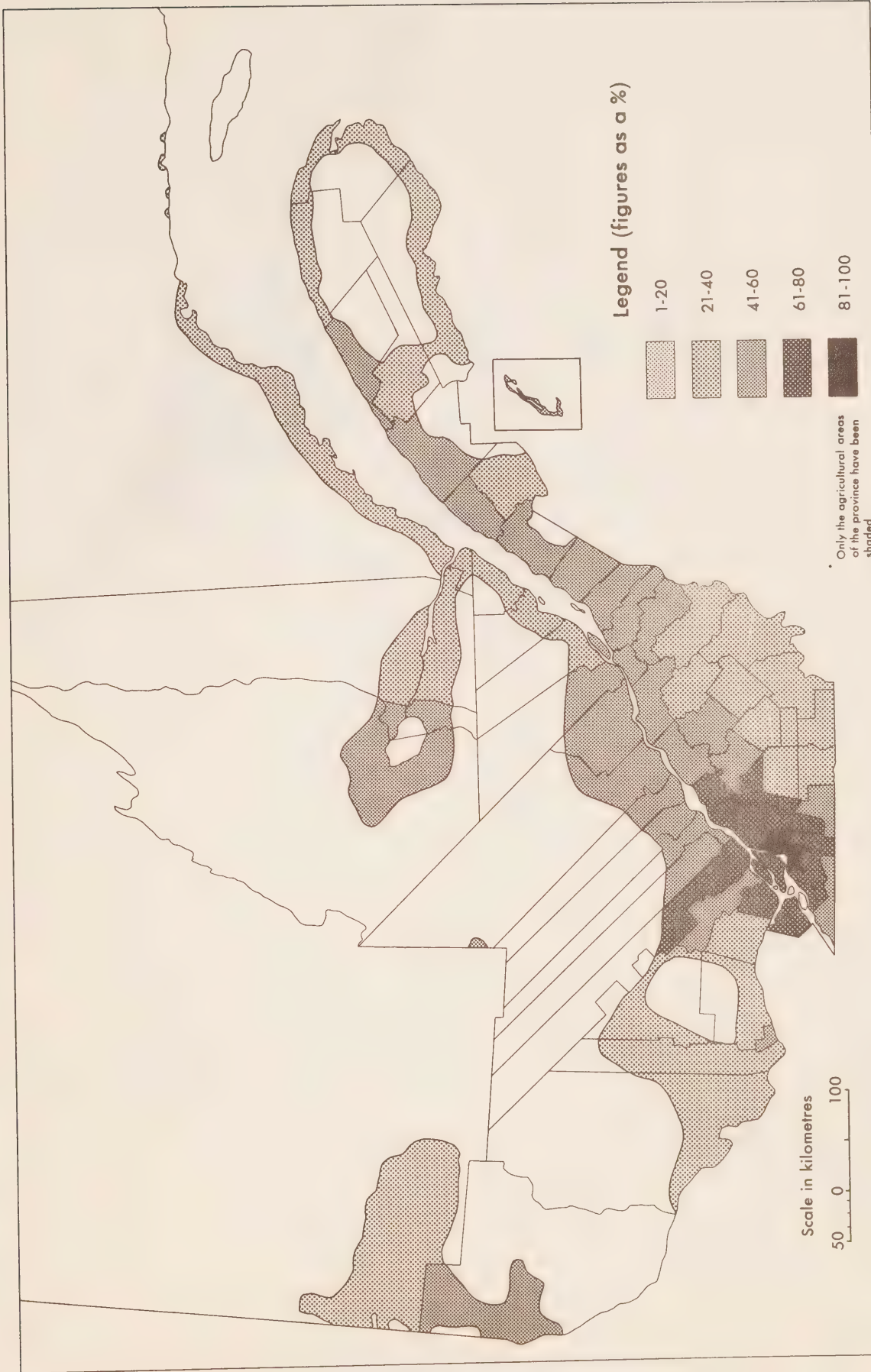


Figure 10 - Cropland as a percent of Total Farmland, Quebec, 1976

Source: Unpublished 1976 Census of Agriculture data



Figure 11 - Land Under Crops, Ontario, 1976
Source: Unpublished 1976 Census of Agriculture data

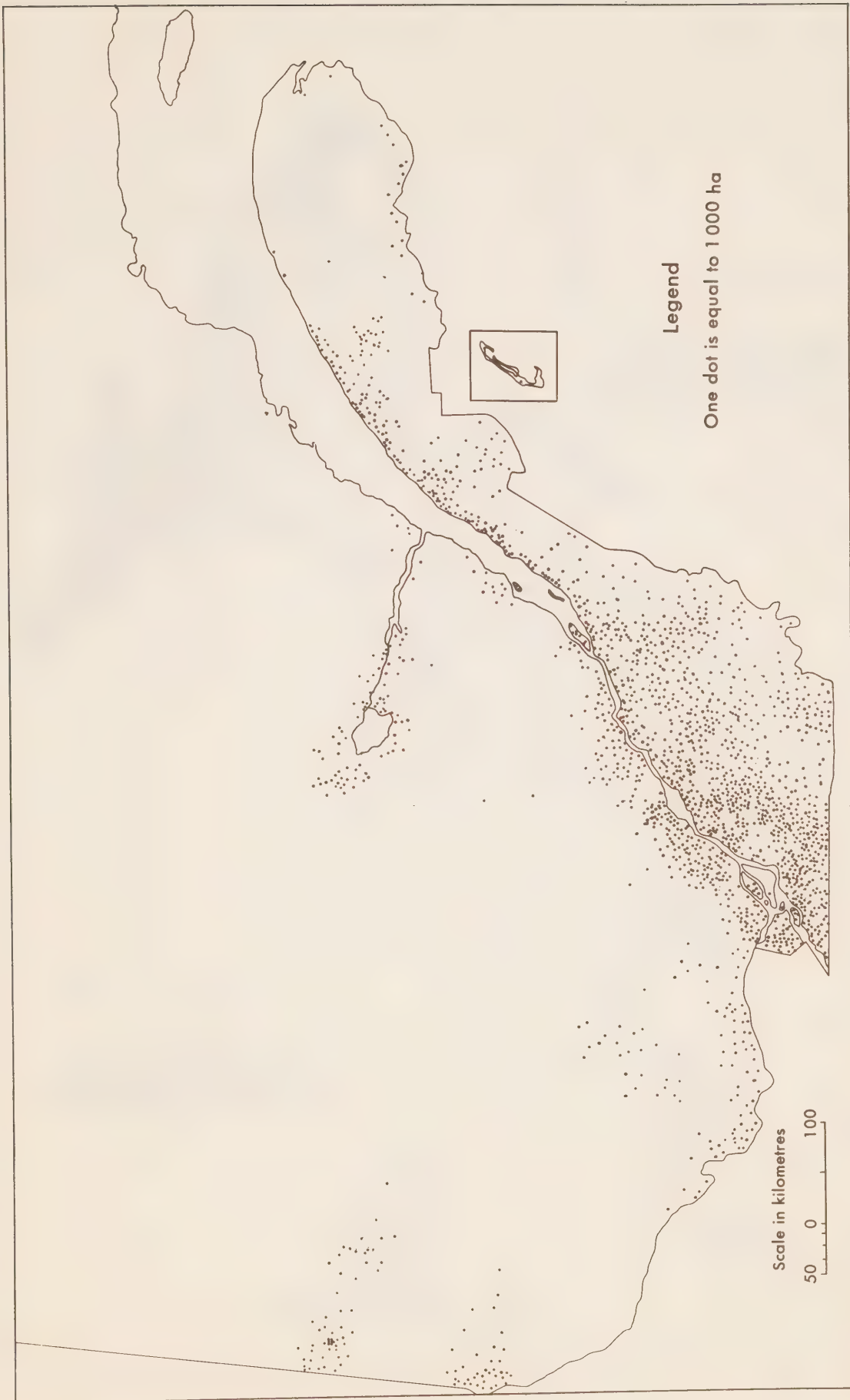


Figure 12 - Land Under Crops, Quebec, 1976
Source: Unpublished 1976 Census of Agriculture data

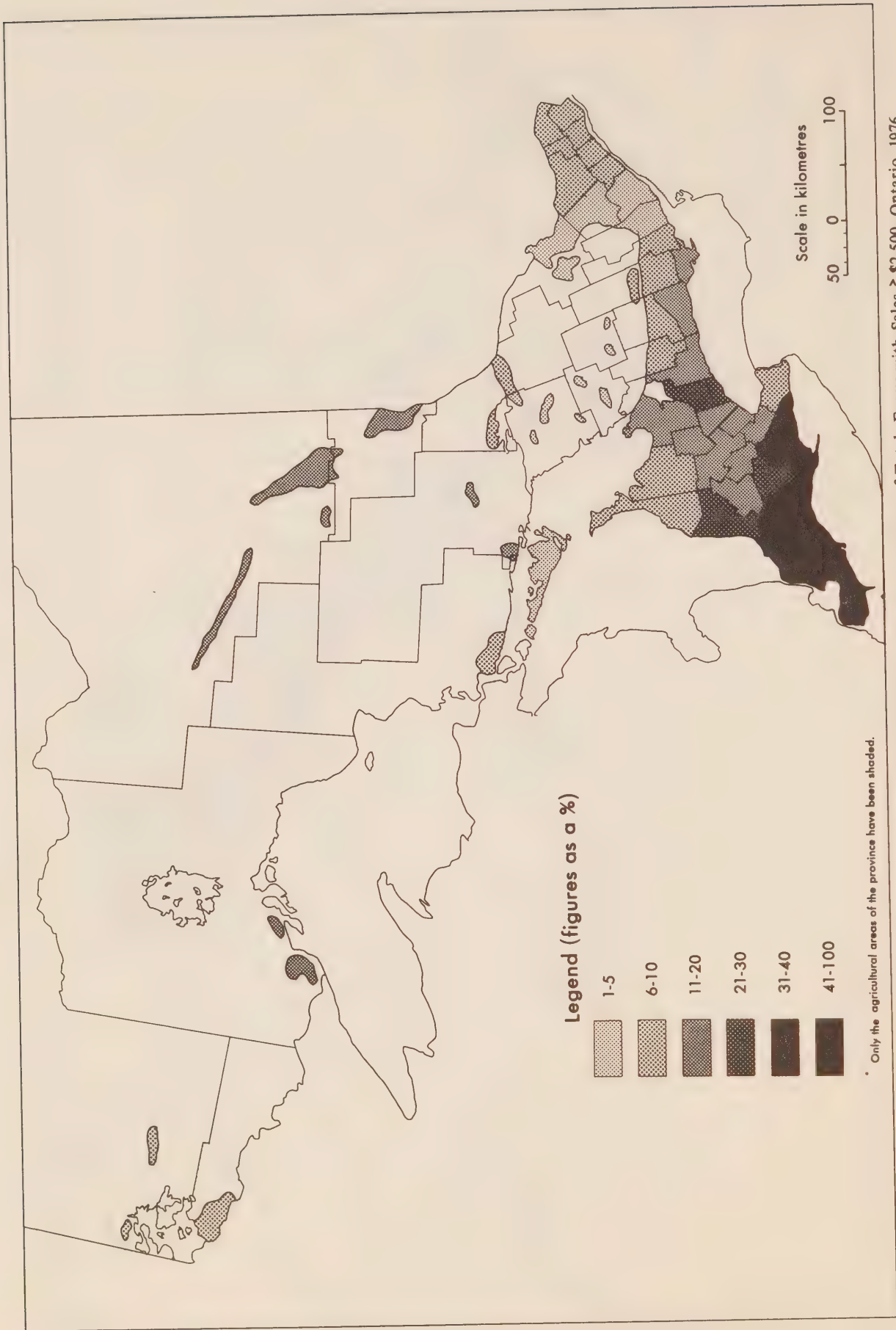


Figure 13 - Grain Corn, Other Small Grains, Wheat and Other Field Crops Speciality Farms as a percent of Total Farms with Sales \geq \$2,500, Ontario, 1976

Source: Published 1976 Census of Agriculture data

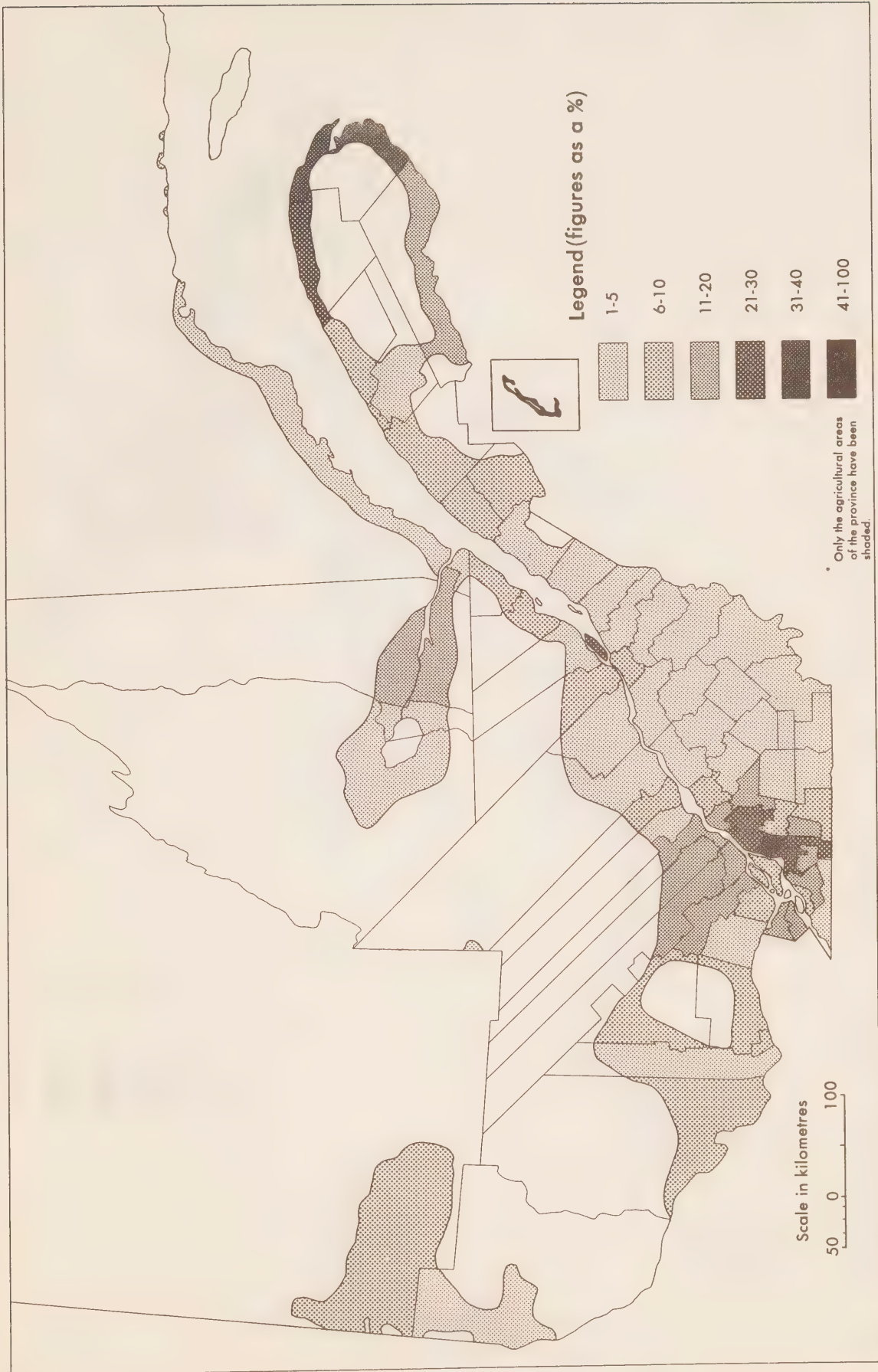


Figure 14 - Grain Corn, Other Small Grains, Wheat and Other Field Crops Speciality Farms as a percent of Total Farms with Sales \geq \$2,500, Quebec, 1976

Source: Published 1976 Census of Agriculture data

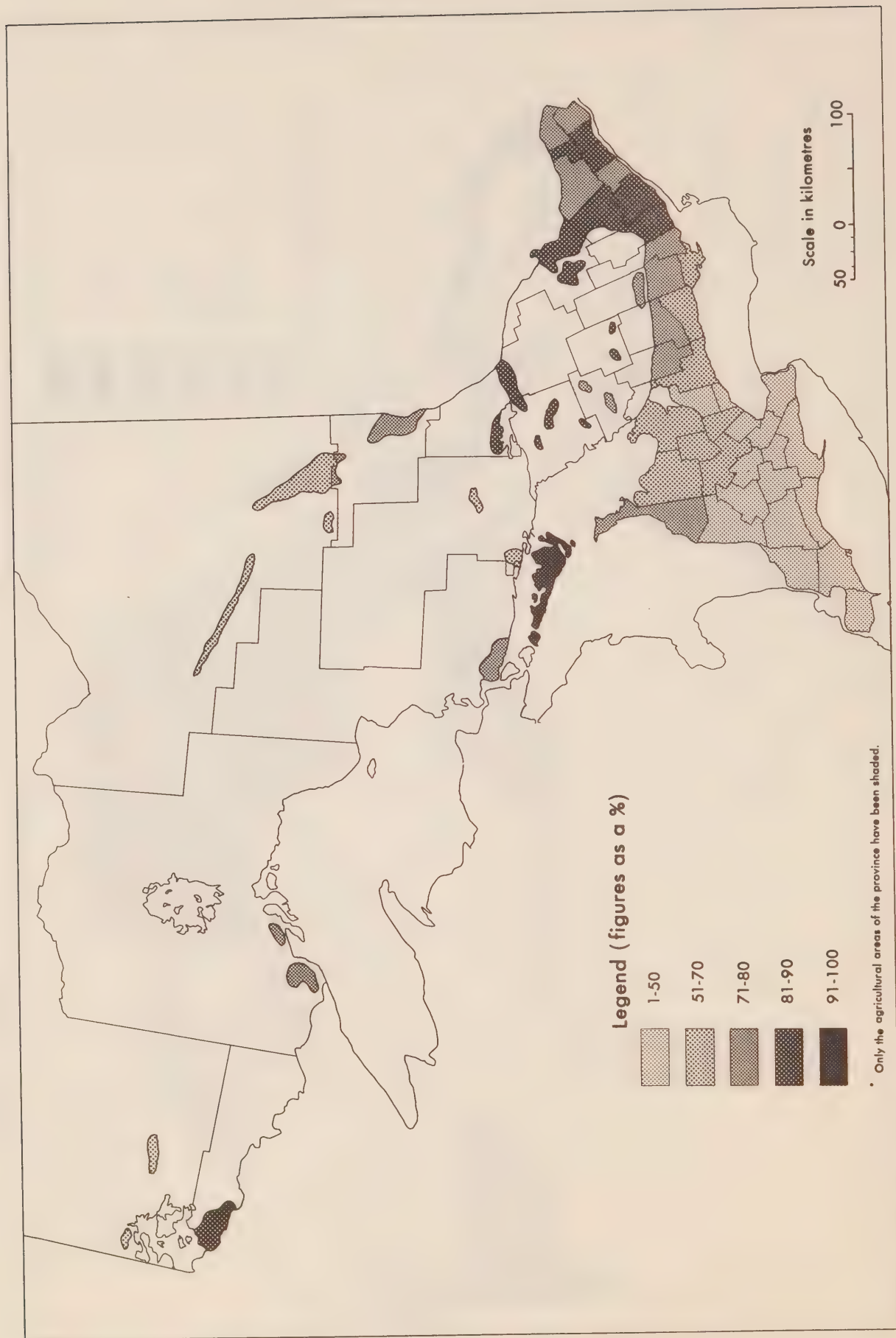


Figure 15 - Dairy and Livestock Speciality Farms as a percent of Total Farms with Sales \geq \$2,500, Ontario, 1976

Source: Published 1976 Census of Agriculture data



Figure 16 - Dairy and Livestock Speciality Farms as a percent of Total Farms with Sales \geq \$2,500, Quebec, 1976

Source: Published 1976 Census of Agriculture data

DEMAND FOR RURAL LAND

The area of land in agricultural production at any one time is the result of a response to factors operative in agricultural and/or non-agricultural sectors over a period of time and at varying intensities.

The loss or abandonment of farmland, which is no new phenomenon, may be either active or passive. On the active side, thousands of acres which once were used for farming have been lost when they were converted to such other uses as housing development, commercial and industrial establishments, highways, airports, reservoirs, military reservations, and state or national forests. On the negative [passive] side, in some areas former farmland has simply been abandoned, permitted to grow up in brush, and has eventually reverted to woodland. Individual fields may be abandoned on a farm which continues to operate, or the whole farm may be abandoned ... ¹

Statistics are available showing where and how much change in farmland area has occurred; however, no data is available to show why the land area has changed, and from what or to what uses the land was transferred.

The process whereby land is allocated between agriculture and other uses is difficult to ascertain and takes a large number of factors into account.

Popular belief holds that urban uses and urban-related uses are to be blamed for the loss in farmland; however, this has not been supported by research results to date:

For the whole province [Ontario] (1941-1966), there was a net loss of 428 acres [173 ha] of farmland for each 1,000 people added to the population. Clearly, not all of this loss can be attributed to the conversion of agricultural land to nonagricultural uses, since other processes such as land abandonment have also had an effect.²

¹J.F. Hart, "Loss and Abandonment of Cleared Farmland in the Eastern United States," *Annals of the Association of American Geographers*, LVIII (1968), p. 418.

²J.F. Howard, "The Impact of Urbanization of the Prime Agricultural Lands in Southern Ontario," M.A. Research Report, University of Waterloo, (1972), p. 29.

... while the data is unsatisfactory, it appears that only a small portion of the land going out of farming is going directly into urban uses. Indications are that development is taking less than 5 percent ... Some lands are being purchased by a variety of individual urban investors, and for a variety of reasons.¹

About 200,000 acres [about 81,000 ha] of land are passing out of farming per year in New York State from a total of land in farms of about 12 million acres [5 million ha]. Perhaps 15,000 acres [6,000 ha] per year go into true urban uses with at least another 15,000 [6,000 ha] idled because they are interspersed with lands being occupied by urban uses. The [remaining] 170,000 acres [about 69,000 ha] of rural retired land are technologically obsolete for modern farm use.²

Several researchers have analyzed factors involved in this rural to urban transition³ and have constructed qualitative or quantitative models to predict changes in agriculture.

Allee discussed five factors involved in the process of land passing out of agriculture in the United States: obsolescence of the land as a result of disadvantages created by new technologies; open-country residences; commercial and public recreational uses; forestry and forest products; and extension of the urban edge.⁴ He pointed out that these are areas requiring additional research.

Howard analyzed and described the urban expansion which occurred in Ontario between 1941 and 1966 south and west of the Canadian Shield.⁵ His results supported the hypothesis that more intensive urbanization does not accelerate the loss of improved farmland per 1,000 population increase. This restrained loss in the highly urbanized metropolitan areas reflects the high cost of land in such areas leading to higher development densities. He argued that when land is properly converted to urban uses, the amount of land consumed is not very large; but without proper planning much agricultural land in the urban fringe is used inefficiently due to speculation, improper soil maintenance, high land prices and the increasingly high taxes on farmland for services demanded by the scattered urbanites.

Clibbon, in an overview of agricultural land use patterns in Quebec, concluded that the *triumvirate of urbanization, recreational development, and land speculation*,⁶ combined to account for most of the decline in

¹G. Hill, President, Ontario Federation of Agriculture, "The Disappearing Land," speech given to the Scarborough Kiwanis Club, Jan. 23, 1975.

²D.J. Allee, "Changing Use of Rural Resources," *Journal of Farm Economics*, XLVIII (1966), p. 1297.

³See also: M.A. Tremblay, and W.J. Anderson, ed., *Rural Canada in Transition*, Ottawa: Agricultural Economics Research Council of Canada, 1966.

⁴Allee, pp. 1297-1305.

⁵Howard.

⁶P.B. Clibbon, "Evolution and Present Patterns of the Ecumene of Southern Quebec," in F. Grenier, (ed.), *Quebec, Studies in Canadian Geography* (Toronto: University of Toronto Press, 1972), p. 16.

farmland since the 1950's. He acknowledged the significant decline in the number of farms and farmland in marginal areas of the Province (including parts of the Drummondville-Quebec City area of the South Shore, and parts of the Laurentian and Appalachian regions).

To gain insight into the allocation process, this section focuses on four aspects of the competition among different uses of land:

1. Urban development;
2. Para-urban development;
3. The spread of recreational land uses; and
4. The response to marginality.

URBAN DEVELOPMENT

Urban growth affects land use in two ways. First, with urban expansion, the use of a particular parcel of land undergoes a concrete change to become part of the urban built-up area. Second, land uses around the built-up area can be altered (often reduced to a state of idleness) in anticipation of an eventual expansion of urbanization into the area. Thus there are three major land use categories within urban areas: the developed (or built-up) area, agricultural land, and the residual.

The total area of incorporated cities, towns and villages with populations of 2,500 or more in 1976 in Ontario was 2.0 million ha and in Quebec, 1.5 million ha.

It is estimated that the developed area within these centers in 1976 was 211,000 ha in Ontario and 169,000 ha in Quebec.¹ These areas account for 10.6 percent of the area within these urban centers in Ontario, and 11.1 percent of the area of those in Quebec.

¹Total developed area within urban centers has been related to population by the following equation:

$$\log(y) = 0.89 \log(x) - 0.54,$$

where y is the total developed area in acres, and
where x is the population of the urban center.

Source: M. Yeates, *Main Street: Windsor to Quebec City* (Toronto: Macmillan Co. of Canada Ltd. in association with Ministry of State for Urban Affairs and Information Canada, 1975), pp. 94-96.

Total developed area as calculated by this equation includes residential, commercial, industrial and institutional uses, parks and open spaces, roads, etc. It is emphasized that this equation, based on measurements of developed land *within* urban municipalities only, does not take into account the development of rural residences within urban commuter sheds (outside the urban municipality) which has increased rapidly in the 1960's and 1970's.

Since Yeates observed no significant difference between trends in Ontario and Quebec, the equation is applied to both provinces.

For this paper 1976 population data for urban centers with populations of 2,500 or more were entered into the equation to estimate the developed area within these urban centers in 1976.

The urban centers of Ontario and Quebec also include some farmland. In 1976, 500,140 ha of Ontario farmland and 360,358 ha of Quebec farmland were located within the boundaries of incorporated cities, towns and villages with populations of 2,500 or more.¹ This occurs where urban boundaries extend beyond the built-up area and include areas of rural land, where farming is still ongoing. In Ontario, such farmland accounted for 8.0 percent of the total farmland in Ontario, and 25.1 percent of the area within these urban centers. Comparatively in Quebec, such farmland accounted for 9.0 percent of the total Quebec farmland, and 23.7 percent of the area of these urban centers.

The third category of land, the residual, refers to the total area within urban boundaries minus the estimated developed area and the farmland within the urban boundaries. The residual areas of 1.3 million ha in Ontario and 1.0 million ha in Quebec account for roughly two-thirds of the total area of these urban centers.

"If 80 percent of the total urban area is regarded as a reasonable upper limit to urban development,"² there is an estimated reserve of 1.8 million ha in Ontario and 1.4 million ha in Quebec of potentially developable land (land that is now agricultural or in the above residual category) within the boundaries of incorporated cities, towns and villages with population of 2,500 or more. Despite this existing reserve of developable land within these urban centers, annexation of surrounding areas by incorporated urban municipalities, creation of enlarged urban municipalities, and development outside urban boundaries will in all likelihood continue in Ontario and Quebec unless planning and development principles and practices change.

PARA-URBAN DEVELOPMENT

Development is occurring at increasing levels in the areas surrounding the major urban centers.

Four-fifths of the population in each province live in urban centers; one-half of Quebec's urban population is concentrated around Montreal and one-third of Ontario's, around Toronto. The larger but less concentrated urban population of Ontario (6.7 million as compared to 4.9 million in Quebec) is reflected by the greater number of large urban centers in Ontario (Table 7).

An increased demand for rural residences and other urban-related functions has developed around these large urban centers. These uses compete for land in rural areas and can ultimately alter traditional rural land use patterns.

By 1976 the rural nonfarm population (15 percent of the total population in Ontario and 17 percent in Quebec) accounted for four-fifths of the total rural population in each province.

¹ Unpublished data for farms with agricultural sales of \$50 or more, *Census of Agriculture, 1976*.

² *Planning for Agriculture in Southern Ontario* (Guelph: University of Guelph, Center for Resources Development, for Ontario Ministry of Agriculture and Food, ARDA Report No. 7, 1972), p. 86.

Table 7.—Major Urban Centers, Ontario and Quebec, 1976

Ontario population		Quebec population	
OVER 100,000 POPULATION			
Toronto (city)	633,318	Montreal (city)	1,080,546
North York	558,398	Laval	246,243
Scarborough	387,149	Quebec	177,082
Hamilton	312,003	Longueuil	122,429
Ottawa	304,462		
Etobicoke	297,109		
Mississauga	250,017		
London	240,392		
Windsor	196,526		
York	141,367		
Kitchener	131,870		
St. Catharines	123,351		
Thunder Bay	111,476		
Oshawa	107,023		
East York	106,950		
Burlington	104,314		
Brampton	103,459		
50,000-100,000 POPULATION			
Sudbury	97,604	Montreal-Nord	97,250
Sault Ste. Marie	81,048	St. Leonard	78,452
Niagara Falls	69,423	Sherbrooke	76,804
Oakville	68,950	La Salle	76,713
Guelph	67,538	Gatineau	73,479
Brantford	66,950	Ste. Foy	71,237
Peterborough	59,683	Verdun	68,013
Markham	56,206	St. Laurent	64,404
Kingston	56,032	Charlesbourg	63,147
Sarnia	55,576	Hull	61,039
North Bay	51,639	Jonquiere	60,691
		Chicoutimi	57,737
		Beauport	55,339
		Trois Rivières	52,518
TOTAL	4,839,833	TOTAL	2,583,123
Total urban	6,708,520	Total urban	4,927,365
Total provincial	8,264,465	Total provincial	6,234,445

Source: *Census of Canada, 1976.*

The extensive development of rural residences in Ontario has been examined through Ontario Hydro consumer data.¹ Low density rural hydro customers have been defined to include year-round customers living at a maximum density of 6 per quarter-mile (0.4 km) road section but not meeting the criteria to be designated as farm customers. The density of customers in this category in most townships increased rapidly from 1960 to 1970 (Figure 17).

¹*Ibid.*, pp. 99-117.

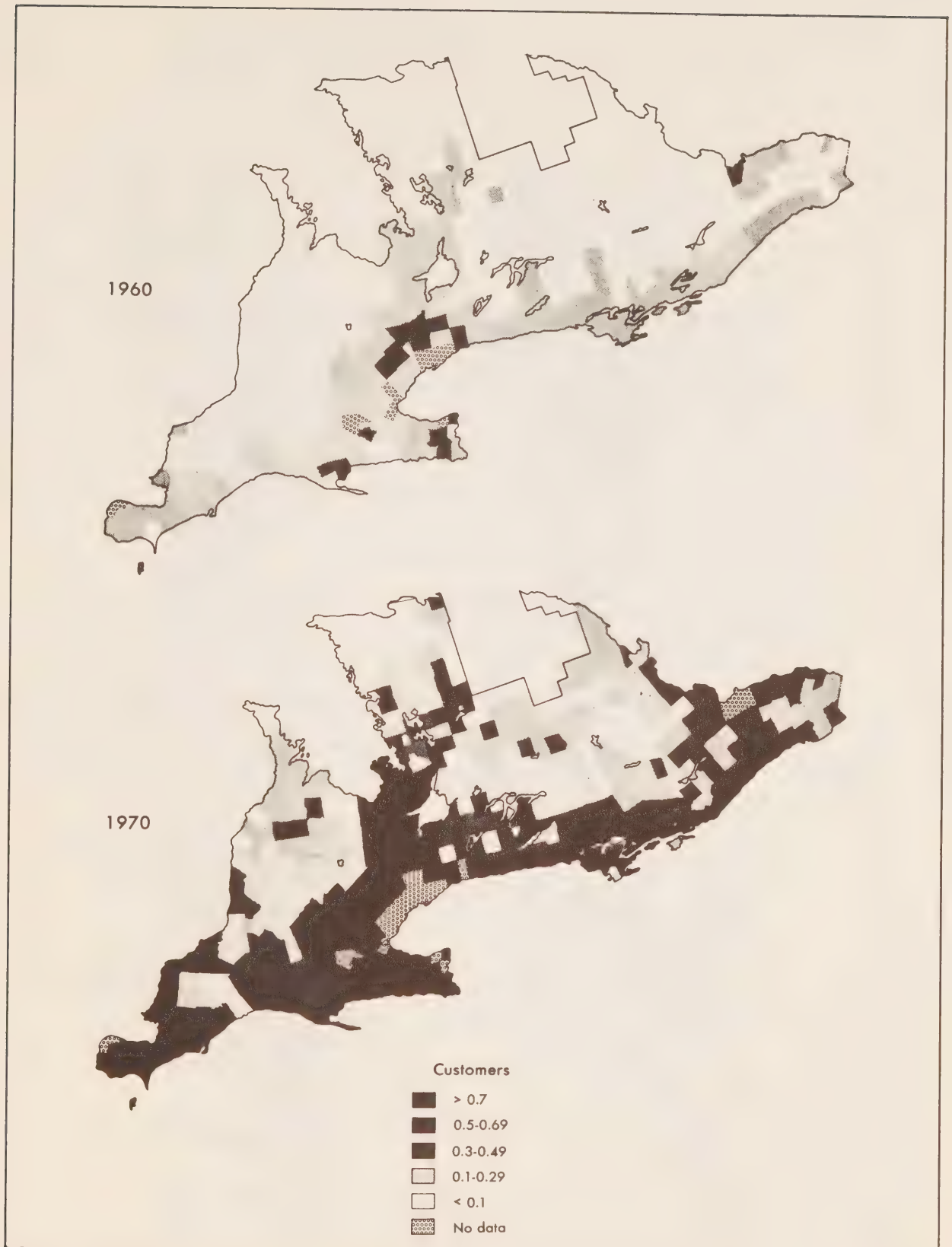


Figure 17 - Residential Low Density Hydro Customers, number per 100 acres, Ontario, 1960, 1970

Source: Planning for Agriculture in Southern Ontario pp. 104-105

If we assume that an average customer in this category consumed 5 acres [2 ha] of land the loss of land from farming during the period could be of the order of 1 to 2 acres per 100 acres [1 to 2 ha per 100 ha] in some of the townships bordering the urban areas. In other areas the density of customers is not so great, and if we assume an average density of 0.7 per 100 acres for all of Southern Ontario, at maximum some 3 percent of the area of Southern Ontario occupied by farms in 1961 would have been lost to low density residential areas between 1960 and 1970.

In view of the small area of Southern Ontario apparently occupied by residential low density residences one might dismiss the trend towards an increasing density in this land use as being insignificant for agriculture. However, expansion in this use may reduce the aesthetic value of the countryside, replacing broad vistas of open landscape with a fenced, subdivided, almost suburban appearance. It may impose additional tax burdens on other rural dwellers because of the high cost of servicing low density residences in the countryside ...

*In fact, an urban phenomenon has become a feature of the whole landscape, urban and rural. This change has been particularly concentrated in the years 1965 to 1970 ...*¹

In his detailed study of low density residential development in areas within 40 miles of Toronto, Punter considered the impact on land prices, evolving social structure, ownership and occupancy of land, land use, and landscape.² Within his four study townships (i.e., Caledon, King, Whitby and Pickering), Punter observed:

Much of the land that has passed out of agricultural use was marginal and in the process of abandonment prior to the main influx of exurbanites. The unwillingness of farmer's sons to continue farming rather than large scale 'buying out' of farmers, has been the major cause of farmland abandonment.

Over 50 percent of the land in these areas has been transferred from one ownership category to another and the dominant position of the farmers in 1954 has been usurped by past and present residents of Metropolitan Toronto ... Agricultural activity has declined but half of the formerly farmer owned land has been retained in agricultural use by the new owners ...

Some 5,000 acres [about 2,000 ha] of what was once farmland now lies idle in these case study areas and

¹*Ibid.*, pp. 102-103.

²J.V. Punter, "Urbanites in the Countryside: Case Studies of the Impact of Exurban Development on the Landscape in the Toronto-Centered Region, 1954-1971," Ph.D. dissertation, University of Toronto, (1974).



Figure 18 - Extent of Urbanization, Windsor-Quebec City Axis, 1961, 1971

Source: Main Street: Windsor to Quebec City reproduced in Leman, Leman

*this has been the major effect of ownership change which saw almost 20,000 acres [about 8,000 ha] pass out of farm ownership ... For example, the vast majority of 10 acre [4 ha] lots consist of 8 3/4 acres [3.5 ha] of idle land.*¹

Most of the para-urban development in Quebec which competes with agriculture for land is concentrated in the area around Montreal which contains some of the best agricultural land in terms of climate and soil.² Over 40 percent of the population increase in the Montreal CMA (census metropolitan area) between 1966 and 1971 occurred in the South Shore Region.³

Para-urban development is characterized by land speculation and general decay of the agricultural economy⁴ of the area. Already by 1959 speculation reaching out from Montreal affected over 250,000 ha and extended over 80 km north into the Laurentian valleys, and east along the St. Lawrence River to the Richelieu River.⁵ Land speculation around Montreal affects areas where agriculture is still viable and endangers agricultural enterprises that possess a competitive advantage in certain areas. This *déstructuration* is characterized by low agricultural incomes, extensive use of land, absence of long-term investments, farmland renting, and the advanced age of farmers. Thibodeau estimated that in 1966 *déstructuration* affected over 130,000 ha between the built-up area of Montreal and the Richelieu River and reduced the agricultural potential of the region by 30 percent.⁶

Figure 18 summarizes the urbanizing trend that has continued into the 1970's in Ontario and Quebec. There is a virtually continuous strip of urban and semi-urban development between Windsor and Quebec City.⁷ Urbanization is fairly extensive in the western and eastern thirds of the axis, but less so in the middle zone (Eastern Ontario).

SPREAD OF RECREATIONAL LAND USES⁸

It is also argued that recreation is a serious competitor for land in agriculture. In certain areas this may be so. The area immediately around cities is one such area where golf courses, riding schools, and

¹*Ibid.*, abstract, pp. 3, 367, 335-337.

²See: *Région Sud: Agriculture*, Project Sud, Montréal: Université du Québec, Institut National de la Recherche Scientifique, for Office de Planification et de Développement du Québec, Rapport Terminal du Module Agriculture, March 1972.

J.C. Thibodeau, *L'Impact de Montréal sur les Zones Agricoles Périphériques*, Montréal: Université du Québec, Institut National de la Recherche Scientifique, 1976.

³*L'Urbanisation au Québec*, Québec: Rapport du Groupe de Travail sur l'Urbanisation, 1976, p. 87.

⁴In French "la déstructuration de l'agriculture," Thibodeau, p. 26.

⁵C. Langlois, "Problems of Urban Growth in Greater Montreal," *Canadian Geographer*, V, 3 (1961), p. 7.

⁶Thibodeau, pp. 26-27.

⁷See: M. Yeates, *Main Street: Windsor to Quebec City*.

⁸The section on recreational land use in Ontario is from *Planning for Agriculture in Southern Ontario*, pp. 111-112.

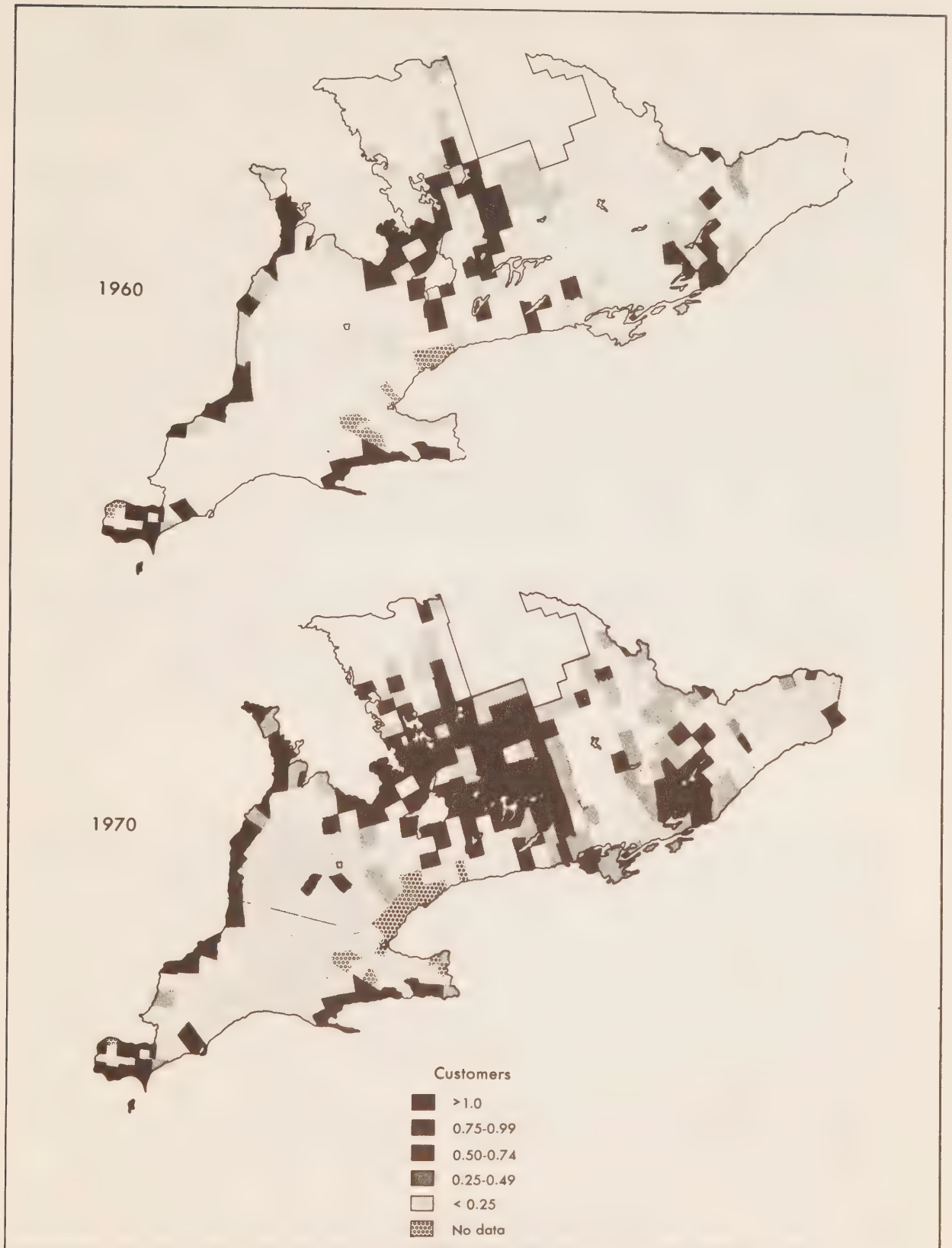


Figure 19 - Residential Intermittent Hydro Customers, number per 100 acres, Ontario, 1960, 1970

Source: Planning for Agriculture in Southern Ontario pp. 113-114

private parks are becoming more numerous than in previous years. Other areas, whilst attractive to recreational uses because of their scenic qualities, are quite unsuitable for agriculture because of the ruggedness of the terrain. Some areas close to such rugged areas or close to water are attractive both to agriculture and to recreation, but these are relatively limited in their spatial extent.

In such areas the invasion of residential and commercial intermittent seasonal hydro customers [indicators of the recreation demand] between 1960 and 1970 is quite noticeable. Figure 19 shows the density of residential intermittent hydro customers in Ontario in 1960 and 1970 respectively. The same areas stand out at both times although densities are higher in 1970 than 1960.

The coastal townships of Lake Erie and Lake Huron together with the Windsor area, Muskoka-Lake Simcoe area and the Rideau Lakes area are the most popular areas for this type of hydro customer and here the loss of land from agriculture to recreation is likely to be significant. It must be remembered that even in these areas competition is greatest closest to water and will rapidly decline away from shorelines. Consequently, although a distinctive pattern of competition does exist, its impact on agriculture is likely to be local and insignificant when compared with losses of land to rural low density residents and to the influence of Toronto.

Quebec's recreational demand for agricultural land has been most intense in the river valleys to the north of the St. Lawrence and Ottawa Rivers, particularly along the North River, north of Montreal. But new recreational sites have been opened up and developed in nonagricultural areas of the Shield, Laurentians, Eastern Townships and Gaspé.

RESPONSE TO MARGINALITY

During the 1960's total farmland in Ontario decreased in significant proportions in the marginal agricultural area of the Canadian Shield (Table 8). Total farmland within the townships of the Shield in Southern Ontario declined 38 percent, and in Northern Ontario 25 percent, between 1961 and 1976. In these two areas combined, farmland declined 465,000 ha in 1961-76 to 0.9 million ha in 1976.

Comparatively, in all of the non-Shield townships of Ontario total farmland declined about 13 percent (0.8 million ha) during the 15 years to 5.3 million ha (accounting for about 85 percent of total Ontario farmland in 1976).

Farm abandonment in Quebec has occurred in marginal agricultural areas such as the *outcrop-spotted slopes and coarse valley trains of the interior Laurentians, the stoney upland soils of interior Appalachian counties such as Megantic and Frontenac, the vast sand outwash plains of northern Lake St. John, and the soggy and climatically marginal Abitibi clay plain.*¹ The abandonment has been a long-term and continuing process in most of these areas since the beginning of this century, and in others since the Depression. Some reforestation and subsequent timbering has

¹Clibbon, pp. 22.

Table 8.—Changes in Total Farmland by Regions, Ontario and Quebec, 1961-76

	Total farmland			Annual rate of change in total farmland		
	1961	1971	1976	1961-1971	1971-1976	1961-1976
ONTARIO		hectares			percent	
Northern Ontario	530,336	377,944	398,147	-3.3	+1.0	-1.9
Canadian Shield in Southern Ontario ..	864,313	597,979	531,261	-3.6	-2.3	-3.2
Interlake Ontario-St. Lawrence Lowland	6,123,805	5,484,096	5,332,297	-1.1	-0.6	-0.9
All regions	7,518,454	6,460,019	6,261,705	-1.5	-0.6	-1.2
QUEBEC						
Canadian Shield	1,268,959	915,183	840,640	-3.2	-1.7	-2.7
Appalachian Region ..	2,169,528	1,575,804	1,406,758	-3.1	-2.2	-2.8
St. Lawrence Lowland	2,307,438	1,880,693	1,761,547	-2.0	-1.3	-1.8
All regions	5,745,925	4,371,056	4,008,945	-2.7	-1.7	-2.4

Source: *Census of Agriculture, 1961, 1971, 1976*. All data for farms with agricultural sales of \$50 or more.

NOTE: See Appendix D for description of regions.

occurred. In both the Canadian Shield and the Appalachian Region of Quebec, farmland declined by about one-third from 1961 to 1976. But even farmland in the St. Lawrence Lowland, the agriculturally significant part of Quebec, decreased 24 percent (546,000 ha) in 1961-76.

The rate of decline in total farmland in 1971-76 in both provinces was considerably less than that of the period 1961-71. Only in the Shield area of Southern Ontario and in the Appalachians in Quebec did farmland decline more than 2 percent per year during 1971-76. Northern Ontario even witnessed an increase during this 5-year period. Farmland declined in both provinces over the entire 15-year period, with Quebec's annual rate of change (-2.4 percent per year) double that of Ontario's. Quebec's farmland in the St. Lawrence Lowland declined at a greater rate than in the comparable area of Interlake Ontario-St. Lawrence Lowland in Ontario.

URBAN AREA PROJECTIONS AND THEIR IMPACT ON AGRICULTURE

Several researchers have developed models which attempt to assess the significance of various factors in predicting (or accounting for) farm

Table 9.—Concentration of Population Around Montreal and Toronto,
1971, 2001

City	Area, ha	Population, 1971			Population, 2001	
Montreal:						
40 mile radius	'000	'000	% ^a	'000	% ^a	
(64.4 km)	1,125	3,173	14.7	4,558	13.8	
Toronto:						
40 mile radius						
(64.4 km)	608	3,397	15.8	6,645	20.2	

^aPercentages relate to the total and forecast population of Canada.

Source: M. Yeates, "The Windsor-Quebec City Urban Axis," p. 76.

area changes.¹ Results from testing of these models seem to indicate that significant factors have been omitted which would account for a large part of the variability; but these factors have not yet been identified or quantified.

Research has also been done using population forecasts to project future urbanizing trends. It has been estimated that the population of urban areas of the Windsor-Quebec City axis, which contained 46 percent of Canada's population in 1971, will increase to 16.6 million people or 50 percent by 2001.² While in 1971 30 percent of Canada's population was concentrated within 65 km of either Toronto or Montreal, 34 percent will be in the same area by 2001 (Table 9). The demand for urban, para-urban and recreational land will increase with this continuing urban population growth.

The loss of agricultural land to urban uses has also been specifically projected for Ontario given various population projections from 1966.³ Estimates of future urban land uses were generated for 18 greater municipalities in southern Ontario to 1991. The total developed urban area in these 18 urban municipalities was estimated under various

¹R. Van der Linde, *Urban-Rural Relationships: A Survey of Research and an Empirical Test*, Centre for Urban and Community Studies, Research Report No. 16 (Toronto: University of Toronto, 1969).

Planning for Agriculture, pp. 115-116.

Challenge for Abundance, Toronto: Special Committee on Farm Income in Ontario, 1969, p. 59.

E.B. MacDougal, *Farm Numbers in Ontario and Quebec Analyses and Preliminary Forecasts*, Centre for Urban and Community Studies, (Toronto: University of Toronto, 1968).

_____, *Farm Numbers in Ontario and Quebec: Alternative Forecasting Models*, Centre for Urban and Community Studies, Special Report No. 8, (Toronto: University of Toronto, 1972).

²M. Yeates, "The Windsor-Quebec City Urban Axis" in A.B. Leman, I.A. Leman, (ed.), *Great Lakes Megalopolis: From Civilization to Ecumenization*, (Ottawa: Ministry of State/Urban Affairs Canada, 1976), pp. 74-75.

³*Planning for Agriculture*, pp. 78-84.

population projections to increase between 38.21 and 84.37 thousand ha from 1971 to 1991 (Table 10). The increases in total developed area increase to between 44.38 and 130.79 thousand ha when the projections include all urban municipalities. Assuming a constant relationship between developed urban area and idled urban land of 1.0 to 0.79, *Planning for Agriculture* estimated a loss to urban uses (including idled and developed land) in all urban municipalities of between 79.44 and 234.11 thousand ha from 1971 to 1991 (depending on the population projections used). The report also estimated the corresponding loss of class 1 and 2 agricultural soils to urban uses to be between 49.29 and 156.53 thousand ha.

Note that the above estimates of losses to urban uses are related only to urban development (total developed area and idled land) *within* municipal boundaries. The report did not include estimates of urban fringe and rural development.

Land consumption by major urban centers in Quebec has not been as comprehensively projected as in Ontario. Projections have been made, however, for the South Shore region for the period 1966-86.¹ The contiguous built-up area of the Montreal suburbs in the South Shore region is projected to increase from 11,794 ha to 21,715 ha between 1966 and 1986. Total urban area (included roads, parks, etc.) of the suburbs will be 38,585 ha in 1986, which will result in the loss of 13,439 ha of prime agricultural soils. In addition to this urban consumption of land, the area indirectly affected by urbanization (by *déstructuration*) in the South Shore region, however, will increase from 145,000 ha in 1966 to 250,000 ha in 1986.

Nowland has also made projections of future urban land requirements to the year 2001 using a conversion rate of 80.9 ha (200 acres) for every 1,000 increase in urban population.² The population projections available to him have since been revised downward by Statistics Canada. Depending on the assumptions for mortality and fertility rates and net migration, total population for 2001 is now projected to be between 10,133.5 and 11,917.1 thousand in Ontario and between 6,508.9 and 7,614.5 thousand in Quebec—significantly less than earlier population projections.³

Using the revised population projections, land absorption from 1971 to 2001 is estimated to be between 189,000 and 327,000 ha in Ontario and between 37,000 and 123,000 ha in Quebec (Table 11). These acreages correspond to 2.6 to 4.5 percent of all class 1 to 3 soils in Ontario and to 1.7 to 5.6 percent of all class 1 to 3 soils in Quebec. Because of the high proportion of class 1 to 3 soils around urban centers in both provinces land absorption by urban population increases may well consume such quality agricultural soils and may have repercussions on the agricultural capacities of Ontario and Quebec. These new projections are significantly less than those being postulated just a few years ago. This exercise indicates the difficulty of making land use forecasts by trying to predict such variables as population growth. Such generalities as the state of the economy and such specifics as transportation patterns, land taxation policies, and development guidelines, all alter land use patterns in an urban society.

¹ *Région Sud: Agriculture*, pp. 193-220.

² J.L. Nowland, *The Agricultural Productivity of the Soils of Ontario and Quebec*, Research Branch, Soil Research Institute, Monograph No. 13 (Ottawa: Agriculture Canada, 1975), pp. 14-17.

³ *Population Projections for Canada and Provinces*, Ottawa: Statistics Canada, SC 91-520, January 1979.

Table 10.—Urban Development Projections, Ontario, 1971-91

	Population projection assumption ^a		
	A-30,000	B-50,000	C-70,000
Projected populations:			
18 CMA's and MUC's ^b	6,473	7,280	8,578
All urban centers ^c	7,241	8,207	10,179
Total developed urban areas, 1991: ^d			
18 CMA's and MUC's	172.85	190.37	219.01
All urban centers	209.96	235.16	296.37
Increase in developed urban areas			
1971-91:			
18 CMA's and MUC's	38.21	55.73	84.37
All urban centers	44.38	69.58	130.79
Increase in developed urban areas plus			
idled land, 1971-91: ^e			
18 CMA's and MUC's	68.40	99.75	151.02
All urban centers	79.44	124.54	234.11
Estimated loss of class 1 & 2 soils,			
1971-91:			
18 CMA's and MUC's	40.71	60.14	92.07
All urban centers	49.29	79.36	156.53

^aPopulation projection based on assumptions of varying fertility rates and annual net migration rates. For this table, the following assumptions apply: A-30,000—total fertility rate will decline from 2,787 in 1966 to 1,397 in 1991 and annual net migration is 30,000; B-50,000—total fertility rate will decline for 2,787 to 2,156 in 1971 and then remain constant until 1991 and annual net migration is 50,000; C-70,000—total fertility rate will remain unchanged at 2,700 level during 1966-91 and annual net migration is 70,000. Base year for the projections is 1966.

^bCensus Metropolitan Areas (CMA's) included are: Windsor, London, Hamilton, Kitchener, Toronto and Ottawa. Major Urban Centers (MUC's) included are: Chatham, Sarnia, Brantford, Niagara Falls, St. Catharines, Welland, Guelph, Brampton, Oshawa, Belleville, Peterborough and Kingston.

^cUrban centers of the 42 most populous counties of southern Ontario. In addition to the above 18 CMA's and MUC's, this total includes: Barrie, Woodstock, Stratford, Owen Sound, Port Colborne, Whitby, Lindsay, Georgetown and Cobourg.

^dExcludes agricultural and idled (vacant) land within urban municipal boundaries.

^eIdled land included with total developed urban area in ratio of 1:0.79 (developed urban area to idled land respectively).

Source: *Planning for Agriculture in Southern Ontario*, pp. 83, 90-93. (Converted to metric units.)

Table 11.—Projected Urban Population and Urban Land Requirements,
Ontario, Quebec, 1971-2001

Year	Total population ^a	Urban population		Land absorption from 1971 ^c	Land absorption as % of total land in classes 1 to 3
		% of total ^b	Increment from 1971		
ONTARIO	'000	%	'000	'000 ha	%
1971	7,703	84			
2001	10,133-	96	2,430- 4,214	189- 327	2.6-4.5
QUEBEC					
1971	6,028	83			
2001	6,509- 7,615	96	481- 1,587	37- 123	1.7-5.6

^aThe 1971 population figures are those of the census. Projections for 2001 from *Population Projections for Canada and the Provinces*.

^bNowland, p. 15.

^cA land absorption coefficient of 80.9 ha (200 acres) per 1,000 increase in urban population was assumed. *Ibid.*, p. 15

SUMMARY

Although possessing very large land bases, Ontario and Quebec have very limited areas suited for agricultural production. Agricultural activity is restricted to a relatively small portion of the provinces by not only the limited extent of good soils in the southern parts of the provinces, but also a cooler climate in the north. Farmland which in 1951 totaled 8.4 million ha in Ontario and 6.8 million ha in Quebec decreased from 1951 to 1976 almost 25 percent in Ontario and over 40 percent in Quebec as a result of changing social and economic conditions and pressures.

By 1976 there were 6.3 million ha of farmland in Ontario and 4.0 million ha of farmland in Quebec, accounting for 6.8 percent and 3.0 percent of the respective provincial land areas. Several structural changes occurred as farms increased in size and devoted an increasing proportion of total farmland to the production of crops.

The changes in agricultural patterns have resulted from not only internal pressures peculiar to agriculture but also from external demands on rural land.

While total population in Ontario and Quebec increased 79.8 percent and 53.7 percent respectively from 1951 to 1976, urban population increased 106.3 percent and 82.9 percent. By 1976 Ontario's urban population (6.7 million) accounted for 81.2 percent of the total provincial population; and Quebec's urban population (4.9 million), for 79.1 percent of the total population.

Nonagricultural demand for land has had an effect on the pattern of farmland use. The pressures on farmland arising from recreational demand are less significant as they mostly occur in areas marginal to farming or relatively concentrated areas around a recreational focus such as a lake. Most pressure on farmland comes from urban and para-urban demand for developable land. More critical than the actual acreage subjected to this demand, is the fact that the demand occurs in areas of primarily good agricultural soils.

It is historical irony that the cities, which now threaten the agricultural production areas around them, relied on the richness of the same agricultural hinterland for their early economic development. Pressures on agricultural land are most acute in the heavily populated Montreal and Toronto areas.

Urban and para-urban demands for land will significantly affect farmland in the future. Disruptive effects from speculation in agricultural areas, coupled with actual conversion of farmland to urban and urban-related uses will decrease the agricultural capacity of Central Canada. It has been estimated that, depending on population trends, 189,000 to 327,000 ha in Ontario and 37,000 to 123,000 ha in Quebec will be converted to urban uses from 1971 to 2001. Much of this conversion will occur near present major urbanized areas—areas with a high proportion of quality agricultural land.

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APPENDIX A: CALCULATION OF AREA OF MAJOR LAND USES, 1976

1. Different sources give different figures for the *Total Land Area* of each province. Particularly, two sources differ; *Canada Year Book 1975* (Ottawa: Statistics Canada, 1975), p. 27, publishes the figures 89,119,410 ha and 135,679,103 ha for Ontario and Quebec respectively, whereas, *Agriculture, 1976 Canada Census*, Vol. XII, Table 3, (Ottawa: Statistics Canada), publishes: 91,743,326 ha and 135,780,889 ha for Ontario and Quebec respectively. This report, part of an examination of agriculture in Ontario and Quebec uses the latter pair of figures for *Total Land Area*, published by Census Canada.

It must be pointed out that *Total Land Area* plus the area of fresh water bodies add up to total area of the provinces. The *Canada Year Book 1975* publishes the following figures for total area (i.e., land + water areas) for Ontario and Quebec respectively: 106,858,236 ha and 154,068,017 ha.

2. The categories of *Agricultural Area* land uses correspond to those used in the 1976 Canada Census. Source: unpublished census data, 1976 Canada Census. Data for farms with agricultural sales of \$50 or more.

3. *Forest Land* is comprised of land capable of producing trees at least 4 inches, dbh (diameter at breast height) and larger on 10 percent or more of the land area. Excluded from this category are: farm woodland; areas of forest 5 acres or less and scattered; and forest areas reserved in parks, game refuges, conservation areas, and nature preserves. Source: 1973 National Forest Inventory, cited in *Canada Year Book 1975*, (Ottawa: Statistics Canada, 1975), p. 426.

4. *Urban Area* is the land area within the boundaries of incorporated cities, towns and villages (with populations of 2,500 and over) minus the agricultural acreage within the boundaries of these urban centers. Source: unpublished 1976 Census data.

5. The area occupied by *Transportation Facilities* is calculated to include the following:

Railroads. First main track mileage for 1973 x 100 foot average right-of-way, where first main track is defined as a single track extending the entire distance between terminals. Mileage source: *Canada Year Book 1975*, (Ottawa: Statistics Canada, 1975), p. 624.

Roads. Surfaced (including rigid pavements, flexible pavement, gravel) road mileage for 1971 x 125 foot average road allowance. Excludes roads and streets under municipal jurisdiction. Source: *Canada Year Book 1975*, (Ottawa: Statistics Canada, 1975), p. 626.

Airports. Area of all Federal Department of Transport owned airports in Ontario (28) and Quebec (31). These generally are the larger airports in the provinces. Figure 5 excludes Pickering, Ontario airport site, seaports, and municipal and private airports and heliports.

6. *National Parks* acreage given in *Canada Year Book 1975*, (Ottawa: Statistics Canada, 1975), p. 33.

7. *Provincial Parks* data are taken from *Canada Year Book 1975*, (Ottawa: Statistics Canada, 1975), pp. 16-17. The Quebec figure includes provincial forests (from *Ibid.*, p. 33).

8. *Indian reserves* acreage given in *Canada Year Book 1975*, (Ottawa: Statistics Canada, 1975), p. 33, includes some double counting of agricultural land (e.g., in Ontario, Indian Reserves include some farmland).

9. *Land Unaccounted for* can include among others: waste land such as open muskeg, swamp and rock; forest areas not capable of producing stands of trees at least 4 inches dbh on 10 percent of the area; forest areas excluded from the categories of *Forest Land*, *National Parks*, and *Provincial Parks and Reserves* (these could be forests in conservation areas, nature preserves, etc., and in small (less than 5 acres) scattered patches of forest (other than farm woodland)); other federal and provincial institutional lands (e.g., CFB Camp Borden, research stations); urban areas not incorporated or incorporated urban areas with populations less than 2,500; transportation use areas not included in above *Transportation Facilities*; and power transmission corridors.

APPENDIX B: CENSUS FARM DEFINITIONS

During the period 1951-76 three different definitions of farms have been used in the censuses.

1951 and 1956 Censuses of Agriculture. For the 1951 and 1956 Censuses of Agriculture, a farm was defined as:

... a holding on which agriculture operations are carried out and which is (a) three acres or more in size or (b) from 1 to 3 acres in size with agricultural production (in the previous year) valued at \$250 or more.

1961-71 Census of Agriculture. For these censuses, a farm has been defined as:

... an agricultural holding of one acre or more with sales of agricultural products during the past 12 months of \$50 or more.

1976 Census of Agriculture. For the 1976 census, a farm has been defined as an:

... agricultural holding of one acre or more with sales of agricultural products during the year of \$1,200 or more.

The 1971-71 definition is more restrictive than the 1951-56 definition, mainly for the 3 acre or more size group because a minimum of \$50 sales of agricultural products is required in this size group. Appendix Table 1 summarizes the effect of the definitional change from 1956-61 in this size group for Ontario, Quebec and Canada. In Ontario an area (comprised of holdings of 3 acres or more) equivalent to 2.3 percent of the area of 1961 census farms was excluded because those holdings did not have the minimum \$50 agricultural sales; in Quebec the figure was 7.4 percent. In terms of the total area of agricultural holdings excluded, these percentages are reduced because additional farmland was included from smaller agricultural holdings which qualified as census farms with the definitional change. These holdings of less than 3 acres now required agricultural sales of only \$50 instead of the previous minimum of \$250. This additional acreage from these small holdings did not significantly reduce the percentages of farmland excluded.

Census data for 1976 is published by Statistics Canada for farms meeting the 1976 definition. 1976 data is available, although unpublished, for farms at the level of the 1971 definition. This report has made use of this unpublished data to allow direct comparison with the results of earlier censuses.

Appendix Table 2 summarizes the effect of the definitional change in 1976. Had the 1971 definition been retained, the number of census farms in Ontario and Quebec would have been 15.4 percent and 17.3 percent, respectively, larger. Farm area would have been only 4.9 percent and 9.7 percent, respectively, larger.

This report uses 1976 data for farms and farmland based on the 1971 definition, making it unnecessary to make adjustments according to the above observations.

In consideration of these definitional changes, caution must be used when making comparisons over the period 1951-76.

Appendix Table 1.—Partial Effect of Census Farm Definition Change Between 1956 and 1961

	Holdings 3 acres in size excluded in 1961 because of new definition in 1961 ^a		All farms included in 1961 census		Holdings 3 acres in size excluded in 1961 as a % of all farms included in 1961	
	<u>no.</u>	<u>ha</u>	<u>no.</u>	<u>ha</u>	<u>no.</u>	<u>area</u>
Ontario	6,159	426,349	121,333	18,578,507	5.0	2.3
Quebec	13,088	1,051,131	95,777	14,198,492	13.7	7.4
Canada	40,731	2,778,698	480,903	172,551,051	8.5	1.6

^aThese are holdings 3 acres or more in size in 1961 but which had less than \$50 in agricultural sales in the previous year. These holdings would have been included had the 1956 definition been retained; there was previously no minimum sales requirement for holdings of 3 acres or more. The new definition in 1961, however, established a minimum of \$50 in agricultural sales.

Appendix Table 2.—Effect of Census Farm Definition Change Between 1971 and 1976

	Holdings excluded in 1976 because of new definition in 1976 ^a		All farms included in 1976 census		Holdings excluded in 1976 as a % of all farms included in 1976	
	<u>no.</u>	<u>ha</u>	<u>no.</u>	<u>ha</u>	<u>no.</u>	<u>area</u>
Ontario	11,818	294,889	76,983	5,966,816	15.4	4.9
Quebec	7,604	354,811	43,983	3,654,134	17.3	9.7
Canada	38,460	1,258,800	300,118	67,168,202	12.8	1.9

^aThese are holdings 1 acre or more in size in 1976, but which had less than \$1,200 in agricultural sales in the previous year. These holdings would have been included had the 1971 definition been retained. Minimum agricultural sales previously had to be \$50. The new 1976 definition required sales of \$1,200 or more.

APPENDIX C: CENSUS DEFINITIONS

CENSUS-FARM

This term is defined in the census as a farm, ranch or other agricultural holding ... [see Appendix B for farm size and value of agricultural sales specifications].

The holding may consist of a single tract of land or a number of separate tracts held under the same or different tenures and operated as a single unit. Where the census-farm was made up of several parts located in different municipalities, the Census reported the complete holding as one unit in the municipality where the headquarters was located.

CENSUS-FARM AREAS

The area of census-farms reported for each subdivision represents the area of land operated by farmers whose headquarters are in the subdivision.

Crown lands, usually pasture land, which were operated under a lease arrangement with federal, provincial or municipal governments, are reported as part of the farming operation of the person to whom the land was leased. However, land which was used under a per head grazing permit or fee is not included.

Large areas of timber land or other nonagricultural land held by a census-farm operator, but operated apart from the farm business, are excluded.

USE OF LAND

All census-farm land is classified according to use under two major divisions: improved land and unimproved land.

IMPROVED LAND

The area of improved land consists of the total of the areas reported for the following four land categories: crop land, summer fallow, improved pasture, and other improved land.

Crop Land. Included in this item is the total area of crop land sown or to be sown for harvest. Acreages from which sod was being sold are also included in this item in 1971 rather than in other improved land as in 1966. Crop land includes the total area of all field crops, plus the areas of fruits, vegetables, greenhouses, mushroom houses and nursery products. Because some crops are reported in fractions of an acre, there may be slight differences between the sum of the individual crop acreages and the total crop land. Where intercropping or double cropping is practised, the land area was to be reported only once in the category area under crops but the areas of each crop are included with the individual crop acreages.

Summer Fallow. The enumerator was instructed to include in this item land from which no crop was to be harvested during the census year, but which was to be cultivated or worked during the year for weed control and/or for moisture conservation. Areas which were sown to a crop with the intention of ploughing the crop under as green manure were enumerated

as summer fallow, but land ploughed or cultivated in the summer after a crop (such as hay or fall rye) had been harvested, was to be enumerated as crop land.

Improved Pasture. All land which was being used for pasture or grazing and which has had some improvements made to it in recent years is included. Improvements would include cultivation, drainage, irrigation, fertilization, seeding down or spraying.

Other Improved Land. This item includes the area of barnyards, home gardens, lanes and roads on census-farms. It also includes areas of cultivated land that were lying idle, being neither summer-fallowed nor cropped, and areas of new breaking that had not been seeded to a crop.

UNIMPROVED LAND

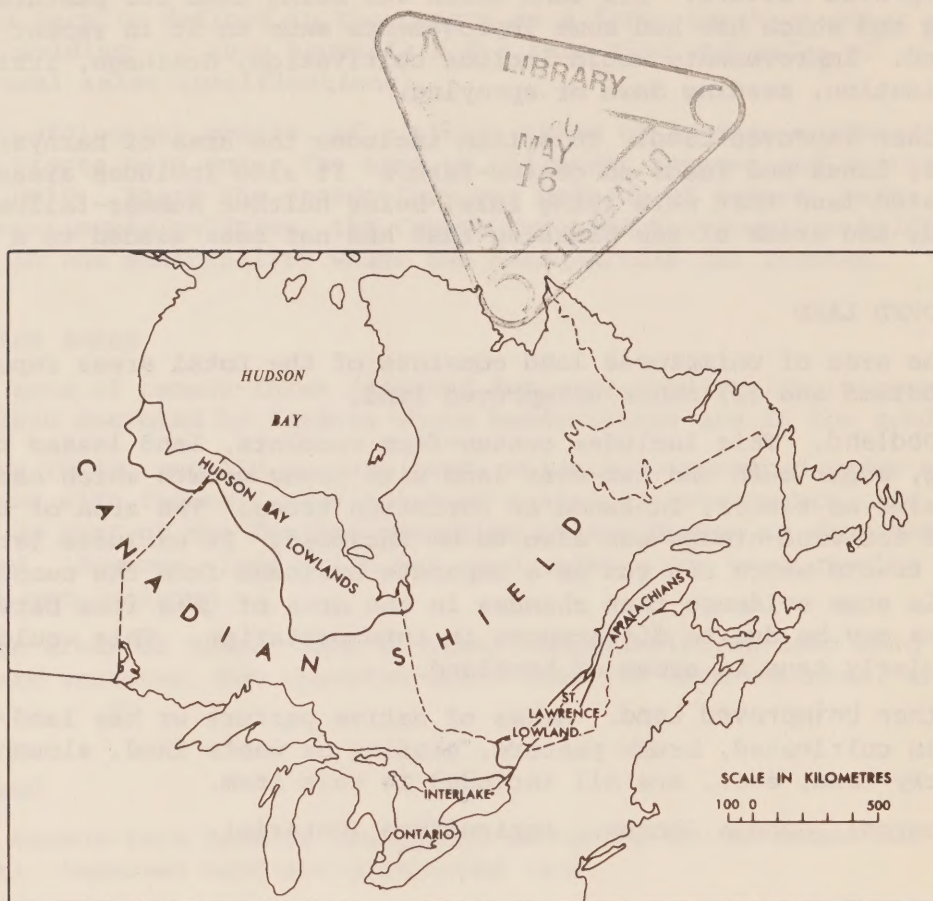
The area of unimproved land consists of the total areas reported for (1) woodland and (2) other unimproved land.

Woodland. This includes census-farm woodlots, land leased for cutting, sugar bush and cut-over land with young growth which has or will have value as timber, fuelwood or Christmas trees. The area of trees planted for wind-breaks was also to be included. It excludes large timber tracts which are run as a separate business from the census-farm. There is some evidence that changes in the area of this item between censuses may be due to differences in interpretation. This would be particularly true in areas of bushland.

Other Unimproved Land. Areas of native pasture or hay land that had not been cultivated, brush pasture, grazing or waste land, sloughs, marsh and rocky land, etc., are all included in this item.

Source: *Canada Census. Agriculture (Ontario).*

APPENDIX D: PHYSIOGRAPHIC REGIONS
OF ONTARIO AND QUEBEC



Source: P.B. Clibbon and L.E. Hamelin, 'Landforms,' in J. Warkentin (ed.),
Canada: A Geographical Interpretation (Toronto: Methuen, 1970), p. 59.

APPENDIX E: CONVERSION TABLES

LENGTH

<i>IMPERIAL</i>		<i>METRIC</i>
1 inch	=	2.540 centimetres
1 foot	=	0.3048 metre
1 yard	=	0.9144 metre
1 rod	=	5.029 metres
1 mile	=	1.609 kilometres

<i>METRIC</i>		<i>IMPERIAL</i>
1 centimetre	=	0.3937 inch
1 decimetre	=	0.3281 foot
1 metre	=	{ 3.281 feet 1.094 yards
1 decametre	=	10.94 yards
1 kilometre	=	0.6214 mile

AREA

<i>IMPERIAL</i>		<i>METRIC</i>
1 square inch	=	6.452 square centimetres
1 square foot	=	0.093 square metre
1 square yard	=	0.836 square metre
1 acre	=	0.405 hectare*
1 square mile	=	259.1 hectares
1 square mile	=	2.590 square kilometres

<i>METRIC</i>		<i>IMPERIAL</i>
1 square centimetre	=	0.155 square inch
1 square metre	=	10.76 square feet
1 square metre	=	1.196 square yards
1 hectare	=	2.471 acres
1 square kilometre	=	0.386 square mile

*1 hectare is synonymous with a square hectometre.

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The Likely Effects on Ontario Soybean Producers of the Shift in the Location of a Soybean Crushing Plant from Toronto to Windsor, by M. Jaeger. Economics Information, June 1979.

Single copies of the above publications are available on request from the Economics Branch, Ontario Ministry of Agriculture and Food, Legislative Buildings, Queen's Park, Toronto, Ontario, M7A 1B6.

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